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## ARTICLE

### PILLS AND PARTISANS: UNDERSTANDING TAKEOVER DEFENSES

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*Corporate takeover defenses have long been a focal point of academic and popular attention. However, no consensus exists on such fundamental questions as why different corporations adopt varying levels of defenses and whether*

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*defenses benefit or harm target corporations' shareholders or society generally. Much of the disagreement surrounding takeover defenses stems from the lack of a fully developed formal analytical framework for considering their effects. Our Article presents several formal models built upon a common core of assumptions that together create such a theoretical framework. These models incorporate the reality that target corporate insiders have superior information about the target but are imperfect agents of its shareholders. They suggest that modern defenses enable target shareholders to extract value from acquirers by empowering corporate insiders, but that takeover defenses do not benefit society as a whole. They also help explain why corporations with different characteristics may choose to adopt varying levels of takeover defenses. Our findings have implications for the longstanding debate about who is best served by state-level control of corporate law and the desirability of increased federal involvement in corporate law.*

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## INTRODUCTION

Corporate takeovers have occupied a prominent position in the popular imagination, the financial press, and corporate law scholarship for a generation.<sup>1</sup> Yet despite all the thought and ink that have been devoted to analyzing takeovers, many questions remain unsettled. There is no consensus on the systemic effects of takeover defenses in general, or of the most important defense mechanism—the shareholder rights plan or “poison pill”—in particular. Scholars disagree on why different public firms exhibit varying levels of takeover defenses, what causes these levels to change over time, and whether the interests of shareholders or managers determine the level of takeover defenses that a firm adopts. These unresolved questions have fueled the debate about whether regulatory competition encourages states to enact socially optimal corporate laws, as well as the related issue of what role, if any, the federal government should play in corporate law.

Much of the disagreement surrounding takeover defenses stems from the lack of a fully developed formal analytical framework for considering their effects. Although a significant number of legal and economic academic papers have discussed takeover defenses from a theoretical perspective,<sup>2</sup> very few have included formal models.<sup>3</sup> Those that

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<sup>1</sup> Popular works about corporate takeovers abound. See, e.g., BRYAN BURROUGH & JOHN HELYAR, *BARBARIANS AT THE GATE: THE FALL OF RJR NABISCO* 477-505 (First Collins 2008) (1990) (providing an investigative account of the takeover of RJR Nabisco in 1988); *WALL STREET* (Twentieth Century Fox 1987) (depicting the story of the fictional corporate raider Gordon Gekko).

<sup>2</sup> See, e.g., Lucian A. Bebchuk, *The Case for Facilitating Competing Tender Offers*, 95 HARV. L. REV. 1028, 1034-50 (1982); Frank H. Easterbrook & Daniel R. Fischel, *Auctions and Sunk Costs in Tender Offers*, 35 STAN. L. REV. 1, 3-9 (1982); Mark Gordon, *Takeover Defenses Work. Is That Such a Bad Thing?*, 55 STAN. L. REV. 819, 827-28 (2002); Lynn

have proposed formal models have only focused on certain facets of the takeover market, which has limited those models' applicability.<sup>4</sup>

Empirical investigations into the effects of takeover defenses on firm performance have failed to resolve these debates. Given the lack of theoretical guidance, it is not surprising that these investigations have yielded little insight.<sup>5</sup> Nonetheless, the sheer magnitude of variation in the empirical findings is shocking. As one commentator has stated,

[S]tudies of [takeover defenses] have been remarkably unproductive over the past twenty years. Not a single strong finding has been confirmed in other studies. Little or no consensus exists on why [takeover defenses] are adopted or what effects they have. Given that as much academic energy has been poured into studying [takeover defenses] as into almost any other area of applied financial economics, the dearth of results is astonishing, and itself in need of explanation.<sup>6</sup>

This Article attempts to fill this gap in the dialogue by presenting several formal models, built upon a common core of assumptions. Taken together, these models create a theoretical framework for analyzing the effects of different levels of takeover defenses. They are the first models of modern takeover defenses to incorporate the widely accepted propositions that a target corporation's managers and directors have the best information about the target and are unfaithful agents of its shareholders.

These models yield many novel and important insights. They suggest that poison pills enable target shareholders to extract value from

A. Stout, *Do Antitakeover Defenses Decrease Shareholder Wealth? The Ex Post/Ex Ante Valuation Problem*, 55 STAN. L. REV. 845, 847-50 (2002).

<sup>3</sup> Cf. Guhan Subramanian, *Bargaining in the Shadow of Takeover Defenses*, 113 YALE L.J. 621, 622 (2003) (stating that the claim that defenses allow targets to extract higher premiums from acquirers has "never [been] subjected to a careful theoretical analysis").

<sup>4</sup> See David Austen-Smith & Patricia C. O'Brien, *Takeover Defences and Shareholder Voting*, 59 ECONOMICA 199, 202-08 (1992) (modeling defensive maneuvers that require shareholder approval); Jeremy Bulow et al., *Toeholds and Takeovers*, 107 J. POL. ECON. 427, 432-38 (1999) (modeling the impact of a toehold—the interest a bidder acquires in a target pre-takeover—on the behavior of the bidder and its competitors in a takeover battle); Eitan Goldman & Jun Qian, *Optimal Toeholds in Takeover Contests*, 77 J. FIN. ECON. 321, 327-33 (2005) (modeling a similar idea to explain that optimal toeholds may be small percentage ownerships); Andrei Shleifer & Robert W. Vishny, *Greenmail, White Knights, and Shareholders' Interests*, 17 RAND J. ECON. 293, 295-98 (1986) (modeling the phenomenon of greenmail).

<sup>5</sup> In Sections I.B and I.D, we provide an analytical framework suitable to guide empirical investigations.

<sup>6</sup> John C. Coates IV, *Takeover Defenses in the Shadow of the Pill: A Critique of the Scientific Evidence*, 79 TEX. L. REV. 271, 317 (2000).

acquirers by empowering corporate insiders. Even though these insiders are unfaithful agents of the shareholders, their superior information and higher reservation price can ultimately redound to the shareholders' benefit.

Our models also provide an explanation for the diverse levels of takeover defenses that different public corporations exhibit. They predict that the level of takeover defenses preferred by both shareholders and managers will vary depending upon several firm-specific characteristics. These characteristics include the degree of uncertainty about the value of the firm as a going concern, the potential synergy gains that the firm offers potential acquirers, and the degree to which the firm's managers are faithful agents of the shareholders. Corporations for which an acquirer is likely to pay the highest premiums are likely to elect higher levels of takeover defenses.

Unlike previous theories, our models predict that shareholders will never choose the lowest possible level of takeover defenses and that managers will not always choose the highest possible level. Therefore, the diversity of defense levels that corporations adopt poses no challenge to theories that shareholders control choices of defense levels or to theories that managers control such choices. Further, the models suggest that, with respect to takeover defenses, the interests of both shareholders and managers diverge from those of society. This highlights the fact that, even if regulatory competition creates a "race to the top," it is a race with respect to shareholder interests and not with respect to those of society. These findings have significant implications for the optimal scope of federal involvement in corporate law. Our models also provide several testable hypotheses to guide future empirical work.

This Article begins with a short overview of the conceptual framework of the public firm and modern takeover defenses. Part II then presents and analyzes several formal game theoretic models, using repeated illustrative numerical examples. Part III discusses some additional implications of these models, compares their predictions to what the existing body of empirical literature has documented, and suggests further empirical work that could be done to test these models. We also include a mathematical appendix for more technically inclined readers.

## I. BACKGROUND

Before presenting formal models, it is worth providing some background on how scholars conceptualize the modern public corporation, as well as how the poison pill and the staggered board work in practice.

A. *Conceptual Framework of the Public Firm*

The chief lens through which corporate law views the corporation envisions shareholders as principals and corporate managers as their agents.<sup>7</sup> Like most real-world agents, managers are not perfectly faithful to their principals. Their incentives are likely to diverge from those of the shareholders<sup>8</sup> and, when this happens, managers may be expected to pursue their own interests at the shareholders' expense.<sup>9</sup> These phenomena are known as "agency costs."<sup>10</sup>

A variety of market and legal mechanisms help discipline managers and reduce agency costs. The capital, product, and labor markets all impose constraints on managers.<sup>11</sup> Much of the law that governs the structure of business associations is geared toward this concern.<sup>12</sup> For example, corporate law imposes a duty of loyalty on corporate managers that prohibits them from self-dealing to the detriment of the shareholders.<sup>13</sup>

<sup>7</sup> See STEPHEN M. BAINBRIDGE, CORPORATION LAW AND ECONOMICS 26-27 (2002) (providing background information about economic theories of the business firm).

<sup>8</sup> *Id.* at 207.

<sup>9</sup> See Jay C. Hartzell et al., *What's in It for Me? CEOs Whose Firms Are Acquired*, 17 REV. FIN. STUD. 37, 59 (2004) (providing evidence that target shareholders' gains are smaller when the merger gives the target CEO personal benefits); Julie Wulf, *Do CEOs in Mergers Trade Power for Premium? Evidence from "Mergers of Equals,"* 20 J.L. ECON. & ORG. 60, 96 (2004) (finding that, in deals in which target CEOs obtain greater post-merger control rights, target shareholders obtain a smaller proportion of joint gains); see also Thomas A. Smith, *The Passion of Professor Fischel: Defending Milken's Financial Revolution*, 22 LAW & SOC. INQUIRY 1041, 1043 (1997) (book review) (describing how, before RJR Nabisco's well-known takeover, its CEO "was famous for squandering corporate cash on perquisites for himself and his cronies" and "brought [in] celebrity athletes at great expense to play golf and party with RJR executives").

<sup>10</sup> See, e.g., DONALD RUTHERFORD, DICTIONARY OF ECONOMICS 10 (1992) (defining the term "agency cost" as a "cost arising from a contractual relationship between a principal and an agent").

<sup>11</sup> BAINBRIDGE, *supra* note 7, at 207.

<sup>12</sup> *Id.*

<sup>13</sup> *Id.* at 306-07.

One of corporate law's most important mechanisms for reducing agency costs is the board of directors.<sup>14</sup> The corporation's shareholders elect its directors, who are legally obligated to monitor the managers and protect the shareholders' interests.<sup>15</sup> The law gives directors vast power over the corporation, including the power to hire and fire the corporation's chief executive officer.<sup>16</sup>

Yet despite the board's great power, it is an imperfect monitoring device. The board frequently includes members of management, or "inside directors," and the CEO often serves as its chairman.<sup>17</sup> Non-manager directors, also called "outside directors" or "independent directors," may be dependent on the managers for information about the company's operations.<sup>18</sup> In addition, the board is a body composed of agents, and is itself susceptible to agency costs.

Another important mechanism for constraining the behavior of corporate managers is the threat of a corporate takeover. If a potential acquirer—be it a competitor, investment fund, or otherwise—determines that a public corporation is being mismanaged, it may seek to buy up that corporation's stock from its current shareholders.<sup>19</sup> If successful, the buyer would be a majority shareholder and would have the power to install a new board of directors, remove the existing managers, and install new, better managers who would run the corpo-

<sup>14</sup> See Lynne L. Dallas, *The Multiple Roles of Corporate Boards of Directors*, 40 SAN DIEGO L. REV. 781, 801-04 (2003) ("Boards of directors are intended to ensure that managers act in the interests of shareholders rather than in their own personal interests.").

<sup>15</sup> See *Dodge v. Ford Motor Co.*, 170 N.W. 668, 684 (Mich. 1919).

<sup>16</sup> See, e.g., DEL. CODE ANN. tit. 8, § 142(b) (2010); Dallas, *supra* note 14, at 801-04.

<sup>17</sup> See *Splitting Up the Roles of CEO and Chairman: Reform or Red Herring?*, KNOWLEDGE@WHARTON (June 2, 2004), <http://knowledge.wharton.upenn.edu/createpdf.cfm?articleid=987> (explaining that in 2004 the same person held the posts of both CEO and chairperson at over seventy-five percent of S&P 500 companies).

<sup>18</sup> Margaret McCabe & Margaret Nowak, *The Independent Director on the Board of Company Directors*, 23 MANAGERIAL AUDITING J. 545, 555 (2008).

<sup>19</sup> See, e.g., Michael C. Jensen & Richard S. Ruback, *The Market for Corporate Control: The Scientific Evidence*, 11 J. FIN. ECON. 5, 6 (1983) (characterizing managerial competition as a way to limit divergence from policies that maximize shareholder wealth); Andrei Shleifer & Robert W. Vishny, *Stock Market Driven Acquisitions*, 70 J. FIN. ECON. 295, 296-97 (2003) (arguing that a takeover and subsequent reorganization can occur when rational managers recognize inefficiency in other businesses); J. Wickramanayake & Andrew Wood, *Determinants of Acquisition Premiums: Empirical Evidence from Mining Industry in Australia and Canada* 6 (unpublished manuscript), available at <http://www.efmaefm.org/0efmameetings/efma%20annual%20meetings/2009-milan/412.pdf> (identifying the removal of inefficient management as a principal reason for takeovers). But cf. Martin Bugeja & Terry Walter, *An Empirical Analysis of Some Determinants of the Target Shareholder Premium in Takeovers*, ACCT. & FIN., Nov. 1995, at 33, 34-36, 56 (testing the proposition that bad management drives takeovers but not finding support).

ration more efficiently. Equipped with better management, the new corporation would be more valuable than the old corporation, which would enable the acquirer to make a profit on the transaction.<sup>20</sup> The threat that the corporation will be acquired, and that the managers will lose their jobs,<sup>21</sup> encourages the managers to serve the shareholders' interests.<sup>22</sup> In essence, the existing managers of public corporations must compete against potential acquirers for the right to manage corporate resources; this concept is often referred to as "the market for corporate control."<sup>23</sup>

Not surprisingly, shareholders and managers have very different attitudes toward the market for corporate control. Shareholders generally want to make sure that a corporation is susceptible to a takeover. The possibility of a takeover helps keep managers disciplined and, if a takeover does occur, the shareholders will often receive a significant premium.<sup>24</sup> Managers, on the other hand, have almost diametrically opposite incentives. They would prefer their behavior to be as unconstrained as possible and dislike takeovers because they often lose their jobs or suffer other career setbacks when such transactions take place.<sup>25</sup> Accordingly, managers tend to be significantly more resistant to takeovers than shareholders are.<sup>26</sup>

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<sup>20</sup> See Marcia Millon Cornett et al., *Performance Changes Around Bank Mergers: Revenue Enhancements Versus Cost Reductions*, 38 J. MONEY, CREDIT, & BANKING 1013, 1049 (2006) (finding that the "industry-adjusted operating performance of merged banks increases significantly after a merger"); Jensen & Ruback, *supra* note 19, at 6, 8 (identifying utilization of better management as a source of takeover gains).

<sup>21</sup> See Jonathan R. Macey & Geoffrey P. Miller, *Universal Banks Are Not the Answer to America's Corporate Governance "Problem": A Look at Germany, Japan, and the U.S.* (explaining that middle managers are often laid off following mergers), in *THE REVOLUTION IN CORPORATE FINANCE* 552, 563 (Joel M. Stern & Donald H. Chew, Jr. eds., 4th ed. 2003).

<sup>22</sup> See Jensen & Ruback, *supra* note 19, at 29-30 (identifying the threat of a takeover as an external control mechanism that incentivizes managers to serve shareholders' interests).

<sup>23</sup> *Id.* at 6.

<sup>24</sup> See, e.g., B. Espen Eckbo, *Bidding Strategies and Takeover Premiums: A Review*, 15 J. CORP. FIN. 149, 154-55 (2009) (finding that average offer premiums exceed forty percent of the target share price prior to a takeover bid's announcement); Sara B. Moeller et al., *Firm Size and the Gains from Acquisitions*, 73 J. FIN. ECON. 201, 220 (2004) (finding that the average and median premiums paid for U.S. public acquisitions announced between 1980 and 2001 were, respectively, sixty-eight and sixty-one percent for large firms and sixty-two and fifty-two percent for small firms).

<sup>25</sup> See Kenneth J. Martin & John J. McConnell, *Corporate Performance, Corporate Takeovers and Management Turnover*, 46 J. FIN. 671, 672 (1991) (finding that "the turnover rate for the top executive of target firms increases dramatically following successful tender offer-takeovers"); James P. Walsh, *Top Management Turnover Following Mergers and Acquisitions*, 9 STRATEGIC MGMT. J. 173, 179-80 (1988) ("Top management turnover rates



Managers use a number of mechanisms to resist takeovers. These mechanisms include blank-check preferred stock,<sup>27</sup> share repurchase programs,<sup>28</sup> and corporate charter provisions that impose restrictions on a majority shareholder.<sup>29</sup> However, the most important modern antitakeover device is the poison pill.<sup>30</sup>

### B. Poison Pills

The poison pill, formally known as a “shareholder rights plan,”<sup>31</sup> was invented in the 1980s by Martin Lipton of Wachtell, Lipton, Rosen & Katz.<sup>32</sup> Since the Delaware Supreme Court upheld their validity in 1985,<sup>33</sup> poison pills have become increasingly commonplace.<sup>34</sup> As long

following a merger or acquisition are significantly higher than normal top management turnover rates.”); *see also supra* note 21.

<sup>26</sup> *See, e.g.,* Macey & Miller, *supra* note 21, at 563-64 (noting that managers have even turned to state legislators to enact antitakeover statutes).

<sup>27</sup> *See* Brent W. Ambrose & William L. Megginson, *The Role of Asset Structure, Ownership Structure, and Takeover Defenses in Determining Acquisition Likelihood*, 27 J. FIN. & QUANTITATIVE ANALYSIS 575, 584-85 (1992) (explaining that blank-check preferred stock—i.e., stock whose terms the board can dictate and that it can issue without shareholder approval—can be used to modify a firm’s capital structure to discourage a takeover attempt).

<sup>28</sup> *See* BAINBRIDGE, *supra* note 7, at 692 (explaining that stock repurchase programs involve buying target shares on the open market through a regular program and can be used to resist takeovers); ALAN PALMITER & FRANK PARTNOY, CORPORATIONS: A CONTEMPORARY APPROACH 922 (2010) (describing the antitakeover effects of repurchase programs).

<sup>29</sup> *See* BAINBRIDGE, *supra* note 7, at 677-79 (discussing supermajority vote requirements). By limiting the powers of a majority shareholder, these provisions make becoming a majority shareholder less desirable. *Id.*

<sup>30</sup> *See* Coates, *supra* note 6, at 320-25 (arguing that most other takeover defenses “have ceased to be of much importance” due to the rise of poison pills); Subramanian, *supra* note 3, at 625 (“[T]he poison pill is by far the most important defense today.”); *cf.* ARTHUR FLEISCHER, JR., TENDER OFFERS: DEFENSES, RESPONSES, AND PLANNING 7 n.23 (1981) (citing numerous sources that criticize the effectiveness of defensive charter provisions).

<sup>31</sup> PALMITER & PARTNOY, *supra* note 28, at 919-20.

<sup>32</sup> *A Tough and Inventive Corporate Lawyer*, WHARTON SCH. U. PA., <http://www.wharton.upenn.edu/125anniversaryissue/lipton.html> (last visited Dec. 15, 2011).

<sup>33</sup> *Moran v. Household Int’l, Inc.*, 500 A.2d 1346, 1357 (Del. 1985).

<sup>34</sup> Twenty-eight states have statutes explicitly authorizing poison pills. *U.S. Proxy Voting Manual: Poison Pill Endorsements*, INSTITUTIONAL SHAREHOLDER SERVICES, <http://governanceanalytics.com/content/menutop/content/subscription/usvmfiles/x6383.html> (last visited Dec. 15, 2011). Others, like Delaware, have recognized them by judicial decision. *See, e.g., Moran*, 500 A.2d at 1357. Thousands of public corporations currently have poison pills in effect. *U.S. Proxy Voting Manual: Poison Pills (Shareholder Rights Plans)*, INSTITUTIONAL SHAREHOLDER SERVICES, <http://governanceanalytics.com/content/menutop/content/subscription/usvmfiles/x6210.html> (last visited Dec. 15, 2011).

as the jurisdiction in which the corporation is incorporated permits poison pills, a board of directors generally has the ability to enact a poison pill quickly and easily.<sup>35</sup> Since no state has outlawed poison pills,<sup>36</sup> almost every U.S. public company essentially operates under a “shadow poison pill” at all times,<sup>37</sup> and so any would-be acquirers must act accordingly.

The key concept behind the poison pill is that it deters a potential acquirer from purchasing the stock of the target by making a takeover unprofitable. Poison pills generally come in one of two varieties: “flip-in” and “flip-over.” They have similar effects and are often adopted in tandem.<sup>38</sup> When triggered, “flip-in” poison pills enable shareholders of the target—other than the acquirer and its affiliates—to purchase additional shares in the target for less than their actual value.<sup>39</sup> By buying new target stock at a discount, the existing target shareholders severely dilute the value of the would-be acquirer’s ownership stake in the target.<sup>40</sup> These rights are usually triggered by the acquirer reaching a particular threshold of target stock ownership, commonly set between ten and twenty percent.<sup>41</sup> “Flip-over” poison pills are similar to “flip-in” poison pills, except that instead of enabling shareholders of the target—again, not including the acquirer or its affiliates—to purchase target stock at below-market prices, they enable shareholders to purchase stock in an acquiring company upon the merger of the target into the acquirer.<sup>42</sup>

Thus, both poison pill varieties menace an acquirer with the prospect of severely diluting its equity investment.<sup>43</sup> Accordingly, acquir-

<sup>35</sup> See Subramanian, *supra* note 3, at 625 (“Because a pill . . . is a dividend of rights to purchase stock, and the board has the exclusive authority to issue dividends, a pill can be adopted without a shareholder vote, in a matter of hours if necessary.” (footnote omitted)).

<sup>36</sup> *Id.* But see *id.* (noting that flip-in poison pills are arguably not always valid in California).

<sup>37</sup> Coates, *supra* note 6, at 277.

<sup>38</sup> BAINBRIDGE, *supra* note 7, at 683-84.

<sup>39</sup> *Id.* at 684.

<sup>40</sup> *Id.*

<sup>41</sup> Lucian Arye Bebchuk et al., *The Powerful Antitakeover Force of Staggered Boards: Theory, Evidence, and Policy*, 54 STAN. L. REV. 887, 904 (2002); accord Subramanian, *supra* note 3, at 625.

<sup>42</sup> BAINBRIDGE, *supra* note 7, at 681.

<sup>43</sup> For example, suppose TargetCo stock is worth \$10 per share with one million shares outstanding, representing a total value of \$10 million, and that the acquisition of 10% of TargetCo’s outstanding shares triggers its poison pill. Assume the poison pill allows each TargetCo shareholder—excluding the acquirer—to buy as many new common shares as it currently owns for \$2 per share. Buying 100,000 TargetCo shares

ers are careful to avoid “swallowing” the poison pill—that is, acquiring enough stock to trigger its dilutive provisions.<sup>44</sup> In fact, bidders essentially never trigger modern poison pills.<sup>45</sup> As long as a poison pill remains in place, a takeover of the target corporation is effectively impossible.

Poison pills also include an additional feature: the target’s board of directors may redeem (i.e., eliminate) a poison pill at little or no cost.<sup>46</sup> These redemption provisions enable the target’s board to clear the way for acquisitions that it deems desirable and which the pill would otherwise prevent.<sup>47</sup> However, the redemption provisions require the board of directors to take affirmative action, and courts generally give significant deference to a board’s decision not to redeem a poison pill.<sup>48</sup> The poison pill therefore makes the board of directors the central focal point in a fight for control of the target.

Accordingly, when a target corporation has adopted a poison pill, the acquirer will generally try to persuade the target’s board of direc-

will cost BuyerCo \$1 million. At that point, the other shareholders will exercise their rights and buy 900,000 new TargetCo shares for a total of \$1.8 million. TargetCo would then be worth \$11.8 million (\$10 million initially plus \$1.8 million in new equity) and have 1.9 million outstanding shares. BuyerCo would own a 5.3% ownership stake in TargetCo, worth about \$625,000—far less than the \$1 million BuyerCo paid.

<sup>44</sup> BAINBRIDGE, *supra* note 7, at 680-85.

<sup>45</sup> Bebchuk et al., *supra* note 41, at 904-05. A bidder once intentionally triggered an early poison pill that only had negative effects if the acquirer attempted a freezeout merger. Triggering it but not attempting a merger actually benefited the acquirer because it precluded the target from attracting a white knight (i.e., another bidder that target management preferred to that acquirer). Stephen M. Bainbridge, *Precommitment Strategies in Corporate Law: The Case of Dead Hand and No Hand Pills*, 29 J. CORP. L. 1, 10-11 (2003). More recently, Trilogy intentionally triggered a poison pill put in place by Selectica to protect its tax assets, apparently on the belief that the particular poison pill at issue was illegal. *See Selectica, Inc. v. Versata Enters.*, No. 4241-VCN, 2010 WL 703062, at \*2, \*8 (Del. Ch. Feb. 26, 2010) (explaining that Joseph Liemandt, the founder of Trilogy and owner of eighty-six percent of its stock, triggered Selectica’s poison pill to demonstrate the illegality of “adopting a pill with such a low trigger”); Merle Erickson & Shane Heitzman, *NOL Poison Pills: Selectica v. Versata*, 127 TAX NOTES 1369, 1369-70 (2010) (discussing Selectica’s attempt to protect its net operating losses through the implementation of a poison pill).

<sup>46</sup> *See* BAINBRIDGE, *supra* note 7, at 684 (describing typical redemption provisions).

<sup>47</sup> *See id.* at 682 (noting that this allows pills to block takeovers the board does not like “while still allowing a friendly deal to be accomplished”).

<sup>48</sup> *See, e.g., Moore Corp. v. Wallace Computer Servs., Inc.*, 907 F. Supp. 1545, 1554-55 (D. Del. 1995) (holding that a board’s good faith belief, based on reasonable investigation, that a takeover offer is not in the interests of the corporation is generally sufficient); *Paramount Commc’ns, Inc. v. Time, Inc.*, 571 A.2d 1140, 1152 (Del. 1989) (“[T]he refusal to entertain an offer may comport with a valid exercise of a board’s business judgment.”).

tors to redeem the pill.<sup>49</sup> This may take the form of direct negotiations with the board itself, or negotiations with the target's managers in an attempt to win their support.<sup>50</sup> If the acquirer succeeds, the board redeems the poison pill and the acquirer proceeds with the takeover. If the acquirer fails in this attempt, its next option is to try to gain control of the target's board at the ballot box by launching a proxy fight in combination with a tender offer.<sup>51</sup> If the proxy fight succeeds, the shareholders elect a new board, which then redeems the poison pill, clearing the way for the takeover.<sup>52</sup>

Thus, while a board of directors has broad discretion to institute and maintain a poison pill,<sup>53</sup> the possibility of a shareholder revolt at the ballot box creates a backstop to the directors' potential abuse of their power.<sup>54</sup> This "ballot box safety valve" provides a mechanism with which to overcome an entrenched board of directors that is not serving the interests of the shareholders.<sup>55</sup> In addition, the threat of a ballot box revolt can increase a board's willingness to redeem a poison pill.<sup>56</sup>

In many cases, there are good reasons to expect the ballot box safety valve to work reasonably well. By default, state law provides that a corporation's directors all sit for election at the corporation's annual shareholders' meeting.<sup>57</sup> Thus, an acquirer can capture control of the board by winning a single proxy fight on a prescribed date, known in advance, that is always less than a year away. In addition, depending on a particular target's bylaws, charter, and state of incorporation, the ac-

<sup>49</sup> See G. William Schwert, *Hostility in Takeovers: In the Eyes of the Beholder?*, 55 J. FIN. 2599, 2599-601 (2000) (discussing how deals may shift between friendly and hostile postures).

<sup>50</sup> *Id.* at 2600.

<sup>51</sup> See Bebchuk et al., *supra* note 41, at 908 ("In the current legal regime, . . . if the board wants to maintain the pill and not sell to a hostile bidder, the only way to gain control passes through the ballot box.").

<sup>52</sup> *Id.* at 907-09. Some states allow pills that are especially difficult to remove, which further delays this process. See, e.g., VA. CODE ANN. § 13.1-646(B) (2006) (allowing a board to limit certain parties' ability to transfer or receive shares and to restrict any accompanying rights they might have); see also Bebchuk et al., *supra* note 41, at 905 (noting the legalization of "no hand," "dead hand," and "slow hand" pills in Pennsylvania, Maryland, and Georgia).

<sup>53</sup> See *supra* note 48 and accompanying text.

<sup>54</sup> See Bebchuk et al., *supra* note 41, at 907 (explaining how the mere presence of the ballot box safety valve encourages the board of directors to serve the shareholders' interests).

<sup>55</sup> *Id.* at 909.

<sup>56</sup> See, e.g., *id.* ("[H]ow often managers will do the right thing will depend on the consequences they face when they do not do the right thing.").

<sup>57</sup> *Id.* at 893.

quirer may be able to act even more quickly, either by calling a special shareholder meeting or by collecting written consents from the shareholders to act in lieu of a meeting.<sup>58</sup> Empirical evidence supports this, suggesting that the presence of a poison pill either does not reduce the likelihood of a takeover or only reduces it by a small amount.<sup>59</sup>

### C. *Effective Staggered Boards*

While the legal default rule is for directors to serve one-year terms,<sup>60</sup> states also allow an alternative known as a staggered or classified board.<sup>61</sup> The directors of a corporation with a staggered board serve multi-year terms whose starting and ending dates are staggered relative to each other, so that only a fraction of the directors sit for election each year. The most common arrangement is for directors to serve three-year terms, with one-third of directors being elected each year.<sup>62</sup>

A staggered board interacts with a poison pill in an important way: because the entire board does not sit for election each year, it becomes harder for an acquirer to gain control of the target's board of directors and remove its poison pill.<sup>63</sup> This makes the ballot box safety valve less accessible.<sup>64</sup>

<sup>58</sup> *Id.* at 910.

<sup>59</sup> See Ambrose & Megginson, *supra* note 27, at 585, 587-88 (finding that “the existence of a poison pill defense is not associated with the probability of a takeover bid”); William J. Carney & Leonard A. Silverstein, *The Illusory Protections of the Poison Pill*, 79 NOTRE DAME L. REV. 179, 182-83 (2003) (contending that poison pills are a mild takeover deterrent); Robert Comment & G. William Schwert, *Poison or Placebo? Evidence on the Deterrence and Wealth Effects of Modern Antitakeover Measures*, 39 J. FIN. ECON. 3, 36-37 (1995) (finding “weak evidence” that poison pills effectively deter takeovers); Randall A. Heron & Erik Lie, *On the Use of Poison Pills and Defensive Payouts by Takeover Targets*, 79 J. BUS. 1783, 1800 (2006) (concluding that “poison pills do not materially affect the probability of takeover success”).

<sup>60</sup> Bebchuk et al., *supra* note 41, at 893.

<sup>61</sup> GRANT A. GARTMAN & JACK D. ISAACS, INVESTOR RESPONSIBILITY RESEARCH CTR., CORPORATE GOVERNANCE STATE BY STATE: A GUIDE TO SELECTED STATUTES, at ii, app. A-1 to -3 (1998); Bebchuk et al., *supra* note 41, at 893. States' rules pertaining to staggered boards differ. For example, Delaware permits three classes of directors, DEL. CODE ANN. tit. 8, § 141(d) (2010), but New York permits four, N.Y. BUS. CORP. LAW § 704(a) (McKinney 2003). These differences are generally irrelevant for our purposes, however, as they have not affected acquirers' ability to take over targets without management approval. See Bebchuk et al., *supra* note 41, at 927-29 (finding no examples from any state of ballot box victories against a target with an effective staggered board).

<sup>62</sup> Bebchuk et al., *supra* note 41, at 893.

<sup>63</sup> *Id.* at 902-09.

<sup>64</sup> *Id.*

Not all staggered boards present identical obstacles to would-be acquirers. For example, some corporations allow the shareholders to remove directors without cause at any time, giving the acquirer a route to remove recalcitrant directors without waiting for their terms to expire.<sup>65</sup> In other instances, it may be possible for the acquirer to “pack the board” by increasing the number of directors and filling the newly created vacancies.<sup>66</sup> In these instances, a staggered board and poison pill combination imposes only a slightly larger hurdle for an acquirer than a poison pill alone.

A staggered board that a would-be acquirer cannot easily eliminate or circumvent is known as an “effective staggered board” or “ESB.”<sup>67</sup> Professor Lucian Bebchuk and others have found that the presence of an effective staggered board has dramatic implications for the availability of the ballot box safety valve. They concluded that the ballot box was a viable mechanism for an acquirer to pursue an acquisition when the target did not have an effective staggered board,<sup>68</sup> but that it was completely foreclosed when the target had an effective staggered board.<sup>69</sup> They were unable to identify a single instance in which an acquirer successfully used the ballot box to gain control of a target corporation with an effective staggered board.<sup>70</sup>

#### D. *Takeover Defenses in the Academic Literature*

There has been a spirited debate in the academic literature over the societal merits of takeover defenses in general and poison pills in particular. Some commentators have decried modern defenses, arguing that they serve only to benefit managers by deterring takeovers, thereby impeding the market for corporate control.<sup>71</sup>

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<sup>65</sup> *Id.* at 909-13.

<sup>66</sup> *Id.* at 910.

<sup>67</sup> *Id.* at 894.

<sup>68</sup> *Id.* at 929.

<sup>69</sup> *Id.* at 927-29.

<sup>70</sup> *Id.* at 928-29.

<sup>71</sup> See, e.g., FRANK H. EASTERBROOK & DANIEL R. FISCHEL, *THE ECONOMIC STRUCTURE OF CORPORATE LAW* 168-74 (1991); Harry DeAngelo & Edward M. Rice, *Antitakeover Charter Amendments and Stockholder Wealth*, 11 J. FIN. ECON. 329, 335 (1983); Frank H. Easterbrook & Daniel R. Fischel, *The Proper Role of a Target's Management in Responding to a Tender Offer*, 94 HARV. L. REV. 1161, 1174-80 (1981); Alan Schwartz, *Search Theory and the Tender Offer Auction*, 2 J.L. ECON. & ORG. 229, 229-51 (1986); see also Robert Daines & Michael Klausner, *Do IPO Charters Maximize Firm Value? Antitakeover Protection in IPOs*, 17 J.L. ECON. & ORG. 83, 83 (2001) (“Takeover defenses are commonly thought . . . to be motivated by management’s interest in entrenching itself.”).

Supporters have countered that poison pills do provide a benefit by giving the target's board of directors time to put the target up for auction. Since the highest value-added acquirer—that is, the acquirer that would gain the most synergy from the acquisition—will be willing to pay the highest price, supporters reason that such an auction allows the most efficient user of the target's assets to purchase the target.<sup>72</sup>

Detractors have responded with two arguments: First, federal regulations on tender offers are already sufficient to create auctions.<sup>73</sup> Second, and more fundamentally, acquirers generally initiate corporate acquisitions, and they face significant search and transaction costs.<sup>74</sup> Forcing acquirers to compete in an auction for the target will diminish their gains from takeovers. Thus, acquirers will have reduced incentives to search for targets and engage in takeovers, which will lead to fewer takeovers.<sup>75</sup> Detractors argue that it would be preferable to simply have acquirers purchase targets with low premiums and, if necessary, to have repeated sales of the target until its assets end up in the hands of the highest-value-added acquirers.<sup>76</sup> This is an essentially empirical question, the answer to which remains unresolved.

Takeover defenses also feature prominently in the long-running debate about how state-level control has affected the evolution of corporate law. Some have argued that states compete for corporate charters, as they provide a state with a source of revenue and income for that state's lawyers.<sup>77</sup>

<sup>72</sup> See, e.g., Bebchuk, *supra* note 2, at 1048; Lucian A. Bebchuk, *The Case for Facilitating Competing Tender Offers: A Reply and Extension*, 35 STAN. L. REV. 23, 39 (1982); Ronald J. Gilson, *Seeking Competitive Bids Versus Pure Passivity in Tender Offer Defense*, 35 STAN. L. REV. 51, 62 (1982); Ronald J. Gilson, *A Structural Approach to Corporations: The Case Against Defensive Tactics in Tender Offers*, 33 STAN. L. REV. 819, 848-55 (1981) [hereinafter Gilson, *A Structural Approach to Corporations*].

<sup>73</sup> Cf. Peter Cramton & Alan Schwartz, *Using Auction Theory to Inform Takeover Regulation*, 7 J. L. ECON. & ORG. 27, 27 n.1 (1991) (discussing the Williams Act).

<sup>74</sup> Easterbrook & Fischel, *supra* note 71, at 1178-79; Schwartz, *supra* note 71, at 233-34.

<sup>75</sup> Easterbrook & Fischel, *supra* note 71, at 1189-90; Schwartz, *supra* note 71, at 237.

<sup>76</sup> Easterbrook & Fischel, *supra* note 2, at 14-15. Part of this argument is that various target corporation assets are likely to have different highest value-added users. *Id.*

<sup>77</sup> See, e.g., ROBERTA ROMANO, *THE GENIUS OF AMERICAN CORPORATE LAW* 6-8 (1993) (discussing state competition and finding that on average from 1960 to 1990 over fifteen percent of Delaware's tax revenue came from incorporation fees); William L. Cary, *Federalism and Corporate Law: Reflections upon Delaware*, 83 YALE L.J. 663, 668 (1974) (explaining that Delaware's corporate law, in addition to raising revenue for the state, creates business for the bar that amounts to a "vested interest"); Roberta Romano, *The State Competition Debate in Corporate Law*, 8 CARDOZO L. REV. 709, 727 (1987) (commenting that the "only groups who are active in the enactment of second generation takeover statutes are business organizations and the bar"); Ralph K. Winter, Jr.,

Among those who subscribe to this view, one school of thought argues that shareholders choose the state in which a corporation will incorporate. Accordingly, states compete to provide the best legal regime for shareholders. This leads to a "race to the top" in which, over time, states choose corporate laws that maximize social welfare.<sup>78</sup>

Another school of thought reasons that it is managers, not shareholders, who choose the state of incorporation. This school argues that managers prefer laws that best enable them to extract benefits from their offices, generally at the expense of the shareholders. This leads states to compete in crafting the *worst* corporate laws, creating a "race to the bottom."<sup>79</sup>

State laws affecting the market for corporate control have been central to this debate because they are thought to be an area in which shareholders' and managers' interests are directly opposed. As noted previously, shareholders tend to favor takeovers while managers do not.<sup>80</sup> While the race to the bottom argument has largely been rejected,<sup>81</sup> some studies have shown that states that offer higher levels of

*State Law, Shareholder Protection, and the Theory of the Corporation*, 6 J. LEGAL STUD. 251, 255 (1977) (noting that the purpose of state corporate code provisions has been to produce tax revenues and that, in Delaware, corporate lawyers have benefited).

<sup>78</sup> See EASTERBROOK & FISCHER, *supra* note 71, at 212-27 (arguing that in theory a "race for the bottom" cannot exist and that competition, if not necessarily driving laws "to the top," does drive them up and thus benefits investors); ROMANO, *supra* note 77, at 148-49 (finding that state competition is the "genius of American corporate law" in that it makes states "sensitive to investor concerns," thereby fueling a "race . . . for the top and not the bottom in the production of corporate laws"); Peter Dodd & Richard Leftwich, *The Market for Corporate Charters: "Unhealthy Competition" Versus Federal Regulation*, 53 J. BUS. 259, 260-61 (1980) (explaining that "investors weigh the costs and benefits of alternative state corporation codes when they consider investments in securities of firms incorporated in particular states" and finding that shareholders benefit even when management chooses the state of incorporation).

<sup>79</sup> See Cary, *supra* note 77, at 670-85 (contending that Delaware has created a corporate legal climate favorable to management through legislative enactments and judicial rulings and claiming that Delaware is "in the lead" in the "race for the bottom"); see also Donald E. Schwartz, *Federalism and Corporate Governance*, 45 OHIO ST. L.J. 545, 555-57 (1984) (arguing that corporate law favors management over shareholder interests and that reforms are unlikely because managers will "flee" to other states).

<sup>80</sup> See *supra* notes 24-26 and accompanying text.

<sup>81</sup> See, e.g., BAINBRIDGE, *supra* note 7, at 14-15 (stating that empirical research does not support the race to the bottom view); ROMANO, *supra* note 77, at 14-15 (explaining how the consensus on the race to the bottom changed following Ralph Winter's 1977 article challenging this view (citing Winter, *supra* note 77, at 289-92)); Romano, *supra* note 77, at 711-12 (maintaining that criticism of race to the bottom explanations has been "devastating" because "managers are compelled, by natural selection, to seek the state whose laws are more favorable to shareholders").



protection against takeovers are better able to attract incorporations.<sup>82</sup> Thus, commentators still debate whether this phenomenon applies to state laws governing takeovers and takeover defenses.<sup>83</sup>

Yet both the race to the top and race to the bottom theories must be reconciled with the significantly varied levels of takeover defenses that different corporations utilize.<sup>84</sup> Presumably, if managers disfavor takeovers, they would choose the highest possible level of defenses. Similarly, if shareholders favor takeovers, they might be expected to choose the lowest possible level of defenses. Shareholders may prefer a somewhat higher level of defenses if it increases their (or their agents') leverage in negotiations with acquirers,<sup>85</sup> but it is unclear why this would produce the diversity of defense levels that corporations exhibit.

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<sup>82</sup> See Lucian Arye Bebchuk & Alma Cohen, *Firms' Decisions Where to Incorporate*, 46 J.L. & ECON. 383, 421 (2003) (finding that states with numerous antitakeover statutes are "more successful in the incorporation market—both in retaining in-state firms and in attracting out-of-state incorporations"); see also Guhan Subramanian, *The Influence of Antitakeover Statutes on Incorporation Choice: Evidence on the "Race" Debate and Antitakeover Overreaching*, 150 U. PA. L. REV. 1795, 1801, 1840 (2002) (finding that a company headquartered in a state with control-share acquisition, business-combination, and pill-validation statutes is twenty-six percent "more likely to be incorporated in that state than a company headquartered in a state without any of these statutes").

<sup>83</sup> See, e.g., Bebchuk & Cohen, *supra* note 82, at 404-11 (arguing that "[o]ne of the most important and hotly debated subjects in corporate law has been the regulation of hostile takeovers" and outlining the positions in the debate regarding antitakeover protections); Marcel Kahan & Ehud Kamar, *The Myth of State Competition in Corporate Law*, 55 STAN. L. REV. 679, 703-04 (2002) ("Whether modern antitakeover statutes have the effect of attracting incorporations is empirically disputed."); Romano, *supra* note 77, at 725-31 ("The impact of takeover statutes remains . . . a troubling open question."); Subramanian, *supra* note 82, at 1840-41, 1852-53 (finding that managers migrate to states with antitakeover statutes, which supports a race to the bottom, but also that managers do not migrate toward, and may migrate away from, those states with the strongest takeover laws).

<sup>84</sup> See Coates, *supra* note 6, at 324 fig.1 (showing the diversity of defense levels among a sample of two thousand large public firms and that in 1996, for example, approximately four hundred and fifty firms had staggered boards, three hundred had fair price provisions, and one hundred required a supermajority vote to approve a merger); Daines & Klausner, *supra* note 71, at 85 (finding that half their sample of firms going public had the strongest level of protection and roughly two-thirds had significant defenses); Michael Klausner, *Institutional Shareholders, Private Equity, and Antitakeover Protection at the IPO Stage*, 152 U. PA. L. REV. 755, 763 (2003) ("Between 1987 and 1999, approximately 6000 firms went public, and roughly half had staggered boards." (footnote omitted)); Seoungpil Ahn et al., *The Differential Effects of Classified Boards on Firm Value 1* (July 17, 2010) (unpublished manuscript), available at <http://ssrn.com/abstract=1265078> ("[O]ver 60% of large publicly traded U.S. firms currently maintain classified boards and . . . this proportion has remained fairly stable over the last decade.").

<sup>85</sup> Cf. Daines & Klausner, *supra* note 71, at 98-99 (discussing the bargaining power hypothesis, which states that antitakeover provisions "can increase share value by en-

Many empirical studies have attempted to explain these patterns by looking for traits common to firms that have adopted poison pills<sup>86</sup> or other antitakeover devices.<sup>87</sup> Unfortunately, the results of these studies vary widely. For example, studies do not agree on whether companies that adopt poison pills tend to be above- or below-average performers.<sup>88</sup>

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hancing the bargaining power of the firm's management when a bid is made, thereby enabling management to extract a higher price from a bidder").

<sup>86</sup> Studies have looked at factors such as firm size, board composition, and stock ownership, among other factors. See, e.g., Jamil Aboumeri, *Poison Pills and Shareholder Value, 1992-96*, ASPEN LAW & BUS. CORP., Dec. 15, 1997; James A. Brickley et al., *Outside Directors and the Adoption of Poison Pills*, 35 J. FIN. ECON. 371, 388-89 (1994); Comment & Schwert, *supra* note 59, at 23; Gerald F. Davis, *Agents Without Principles? The Spread of the Poison Pill Through the Intercorporate Network*, 36 ADMIN. SCI. Q. 583, 603-06 (1991); Gerald F. Davis & Henrich R. Greve, *Corporate Elite Networks and Governance Changes in the 1980s*, 103 AM. J. SOC. 1, 21-26 (1997); Richard J. Dowen et al., *Poison Pills and Corporate Governance*, 4 APPLIED FIN. ECON. 305, 311 (1994); Rakesh Duggal & James A. Millar, *Institutional Investors, Antitakeover Defenses and Success of Hostile Takeover Bids*, 34 Q. REV. ECON. & FIN. 387, 399 (1994); Charmen Loh, *The Influence of Outside Directors on the Adoption of Poison Pills*, Q.J. BUS. & ECON., Winter 1994, at 3, 10; Paul H. Malatesta & Ralph A. Walkling, *Poison Pill Securities: Stockholder Wealth, Profitability, and Ownership Structure*, 20 J. FIN. ECON. 347, 374 (1988); Paul Mallette & Karen L. Fowler, *Effects of Board Composition and Stock Ownership on the Adoption of "Poison Pills"*, 35 ACAD. MGMT. J. 1010, 1028-31 (1992); Michael Ryngaert, *The Effect of Poison Pill Securities on Shareholder Wealth*, 20 J. FIN. ECON. 377, 387-88 (1988); John S. Strong & John R. Meyer, *An Analysis of Shareholder Rights Plans*, 11 MANAGERIAL & DECISION ECON. 73, 75-78 (1990); Chamu Sundaramurthy, *Corporate Governance Within the Context of Antitakeover Provisions*, 17 STRATEGIC MGMT. J. 377, 387-88 (1996); cf. Jennifer E. Bethel et al., *Block Share Purchases and Corporate Performance*, 53 J. FIN. 605, 617 (1998) (finding that firms with poison pills or other takeover deterrents were neither more nor less attractive to activist block share purchasers than firms without such defenses).

<sup>87</sup> See, e.g., Anup Agrawal & Gershon N. Mandelker, *Large Shareholders and the Monitoring of Managers: The Case of Antitakeover Charter Amendments*, 25 J. FIN. & QUANTITATIVE ANALYSIS 143, 145 (1990); Sanjai Bhagat & Richard H. Jefferis, *Voting Power in the Proxy Process: The Case of Antitakeover Charter Amendments*, 30 J. FIN. ECON. 193, 195, 219 (1991); Kenneth A. Borokhovich et al., *CEO Contracting and Antitakeover Amendments*, 52 J. FIN. 1495, 1503 (1997); Gregg A. Jarrell & Annette B. Poulsen, *Shark Repellents and Stock Prices: The Effects of Antitakeover Amendments Since 1980*, 19 J. FIN. ECON. 127, 155 (1987); Victoria B. McWilliams, *Are Antitakeover Charter Amendments Good News or Bad News for Managers and Shareholders?*, J. APPLIED BUS. RES., Spring 1994, at 82, 86.

<sup>88</sup> Compare Malatesta & Walkling, *supra* note 86, at 350, 372 (finding that firms adopting pills had lower profitability ratios, but not operating margins, in the year preceding pill adoption), and Strong & Meyer, *supra* note 86, at 76 (finding that pill-adopting firms had lower price-to-earnings ratios, higher extraordinary items, and higher tax loss carryforwards), with John M. Bizjak & Christopher J. Marquette, *Are Shareholder Proposals All Bark and No Bite? Evidence from Shareholder Resolutions to Rescind Poison Pills*, 33 J. FIN. & QUANTITATIVE ANALYSIS 499, 518-19 (1998) (finding no significant relationship between pill adoption and pre- or post-adoption stock returns), Davis & Greve, *supra* note 86, at 23-25 (finding no significant relationship between market-to-book ratio and pill adoption), Dowen et al., *supra* note 86, at 311 (same), and Mallette

Studies even disagree on the seemingly straightforward question of whether larger or smaller firms are more likely to adopt poison pills.<sup>89</sup>

As Professor John Coates has noted, these inconsistent results may stem from the fact that these studies generally do not consider the looming presence of a “shadow pill.”<sup>90</sup> Because almost all firms can easily adopt a poison pill if a bidder appears, there is arguably no substantive difference between firms with poison pills and those without; for most firms, adopting a poison pill merely sends a signal.<sup>91</sup> This methodological concern potentially calls into question many poison pill studies.<sup>92</sup>

Similarly, studies that focus on other takeover defenses often fail to fully account for the presence of a shadow poison pill,<sup>93</sup> which renders many other defenses superfluous.<sup>94</sup> For example, if an acquirer who gains control of the target’s board can remove a defense, it adds little additional protection beyond what the shadow poison pill already confers.<sup>95</sup> More generally, studies often fail to account for interactions between defenses.<sup>96</sup>

More recent empirical studies have responded to these methodological critiques by focusing on takeover defenses at the IPO stage.<sup>97</sup>

& Fowler, *supra* note 86, at 1025-27 (finding that firms adopting poison pills did not have lower returns on equity prior to pill adoption).

<sup>89</sup> Some studies have found that larger firms are more likely to adopt pill defenses. See, e.g., Aboumeri, *supra* note 86; Comment & Schwert, *supra* note 59, at 25. Other studies have reached the opposite conclusion; that is, that smaller firms are more likely to adopt poison pills. See, e.g., Davis, *supra* note 86, at 608; Mallette & Fowler, *supra* note 86, at 1027. In contrast to these two groups of studies, some studies have found that firm size has no effect on the likelihood of pill adoption. See, e.g., Malatesta & Walking, *supra* note 86, at 370 n.22; Sundaramurthy, *supra* note 86, at 388 tbl.4.

<sup>90</sup> Coates, *supra* note 6, at 286-91.

<sup>91</sup> *Id.* at 297-99.

<sup>92</sup> See *id.* at 286-91 (arguing that “pill event studies suffer from a serious design flaw” in that they fail to take into account the effects of shadow pills).

<sup>93</sup> See *id.* at 320-25 (claiming that studies focusing on supermajority requirements and fair price provisions “are no longer relevant . . . in the era of the shadow pill”).

<sup>94</sup> See *id.* at 325 (noting the rarity with which fair price and supermajority charter amendments have been proposed and contending that “they have ceased to be of much importance in the shadow of the pill”).

<sup>95</sup> See *id.* at 325-28 (asserting, for example, that “[w]ithout the pill, the presence or absence of a classified board is largely irrelevant”).

<sup>96</sup> *Id.*

<sup>97</sup> See, e.g., Daines & Klausner, *supra* note 71, at 85 (examining charters at the IPO stage to “avoid[] the selection bias and mixed signals that are present in studies of [takeover defenses] that already public firms adopt by charter amendment”); Klausner, *supra* note 84, at 763 (attempting to explain firms’ silence on takeover-friendly charter provisions at the IPO stage); Arno Forst et al., Insider Entrenchment and CEO

One study by Professors Robert Daines and Michael Klausner considered the level of takeover defenses in the charters and bylaws of 310 newly public firms and tested several possible explanations for the observed variation.<sup>98</sup> Daines and Klausner did not find evidence that the interests of a firm's shareholders determined its level of takeover defenses, but they did find that defenses were not correlated with indicators of managerial rent-seeking.<sup>99</sup> Another study by Klausner focused on newly public firms with private equity and leveraged-buyout firm investors and found that many potential rationales previously proposed to explain varied takeover defense levels—such as inducing founders to sell additional shares, preserving efficient private benefits, pre-IPO agency costs, and facilitating team production processes—did not fit the data.<sup>100</sup> An empirical study by Professor Seoungpil Ahn and others found that certain firms—those with greater advisory needs and whose managers are easier to monitor—may benefit from having staggered boards, while other firms may not.<sup>101</sup> While this study potentially offers insight into why different levels of defenses are optimal for different firms, it does not explain how a firm actually chooses its level of defenses and, like previous works, it is in tension with both shareholder primacy and managerialist theories.<sup>102</sup> Thus, none of these empirical studies suggests an explanation for the observed diversity of defense levels among public firms.

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Compensation: Evidence from Initial Public Offering Firms 28-30 (Oct. 11, 2011) (unpublished manuscript) (on file with authors) (finding that entrenchment decisions at the IPO stage heavily influence post-IPO CEO compensation).

<sup>98</sup> See Daines & Klausner, *supra* note 71, at 85, 110-13 (considering, among others, the “bargaining power, rational myopia, [and] private benefits hypotheses”).

<sup>99</sup> *Id.* at 110-11.

<sup>100</sup> Klausner, *supra* note 84, at 775-84; see also Lucian Arye Bebchuk, *Why Firms Adopt Antitakeover Arrangements*, 152 U. PA. L. REV. 713, 723-28 (2003) (arguing that conflicting evidence on midstream and IPO behaviors cannot be easily explained by existing theories); Lynn A. Stout, *The Shareholder as Ulysses: Some Empirical Evidence on Why Investors in Public Corporations Tolerate Board Governance*, 152 U. PA. L. REV. 667, 689-703 (2003) (arguing that classical theories of agency cost-reduction cannot comfortably explain empirical evidence as it relates to the directors of public firms and how they carry out their responsibilities).

<sup>101</sup> Ahn et al., *supra* note 84, at 8.

<sup>102</sup> If shareholders' interests determine a corporation's level of takeover defenses, one would not expect to see firms with staggered boards that are not benefitted by them. If managers determine a corporation's defense level, there should be some reason why they prefer having staggered boards in some cases but not in others. Ahn and others suggest staggered boards are likely to increase firm value when board stability signifies board independence and careful scrutiny of management, as opposed to rent-seeking by insiders. *Id.* at 30. However, it would seem that management would prefer not to have a staggered board in such instances.

As mentioned, while numerous papers have broadly analyzed corporate takeovers and defenses from a theoretical perspective,<sup>103</sup> most have not included formal mathematical models.<sup>104</sup> Most formal models of takeover defenses have restricted themselves to narrower aspects of the takeover market.<sup>105</sup> For example, Professors Andrei Shleifer and Robert Vishny presented a model demonstrating how antitakeover maneuvers may maximize shareholder value.<sup>106</sup> Their model also illustrates that negative share-price reactions associated with such maneuvers may be attributable to new information that the maneuvers reveal about the target, rather than the maneuvers themselves.<sup>107</sup> However, their model, designed to analyze greenmail,<sup>108</sup> only applies to “action[s] that effectively eliminate[] a potential acquirer.”<sup>109</sup> Thus, it is not directly translatable to the larger context of takeover defenses, such as poison pills, which do not have this effect.<sup>110</sup> Professors David Austen-Smith and Patricia O’Brien presented a model that explains why shareholders may sometimes vote in favor of antitakeover provisions that decrease firm value.<sup>111</sup> However, a corporation’s board of directors is generally free to adopt a poison pill without any action by shareholders, thus limiting this model’s applicability to the modern takeover market.<sup>112</sup>

More recently, Professor Guhan Subramanian constructed a model of takeover defenses using the analytic framework of negotiation theory.<sup>113</sup> He then used this model to illustrate how previous theoretical discussions’ failure to account for real-world phenomena led them

<sup>103</sup> See sources cited *supra* note 2.

<sup>104</sup> See *supra* note 3 and accompanying text.

<sup>105</sup> See sources cited *supra* note 4.

<sup>106</sup> Shleifer & Vishny, *supra* note 4, at 297-308.

<sup>107</sup> *Id.*

<sup>108</sup> Greenmail generally refers to a target corporation buying back a potential acquirer’s shares at a premium in exchange for the potential acquirer agreeing not to own any target shares for a period of time. See *id.* at 293 (defining greenmail and describing it as one of the “most prominent example[s] of a managerial action commonly believed to be in conflict with shareholders’ interest”).

<sup>109</sup> *Id.* at 294.

<sup>110</sup> See sources cited *supra* note 59.

<sup>111</sup> See Austen-Smith & O’Brien, *supra* note 4, at 212-13 (arguing that, given certain signaling effects and other actors’ responses to their actions, shareholders may be choosing the “lesser of two declines in value”).

<sup>112</sup> See Coates, *supra* note 6, at 286-87 (demonstrating the ease with which “large, sophisticated targets” can quickly adopt a poison pill).

<sup>113</sup> See Subramanian, *supra* note 3, at 640-44 (applying a Nash bargaining game to explain takeover behavior). For an explanation of a Nash bargaining game, see John F. Nash, Jr., *The Bargaining Problem*, 18 *ECONOMETRICA* 155, 157-59 (1950).

to overstate the value of defenses to target shareholders.<sup>114</sup> Subramanian posits that, at best, an acquirer has all of the negotiating leverage when there are no defenses, while strong defenses place both parties on even footing.<sup>115</sup> He argues that, in practice, other factors are likely to constrain outcomes, such as other options available to acquirers or targets (e.g., selling to or buying another firm),<sup>116</sup> the costs of a hostile bid,<sup>117</sup> and managerial unfaithfulness.<sup>118</sup> Subramanian also recognizes that target managers often have private information regarding the true value of the firm and argues that this militates in favor of friendly deals, further reducing the value of defenses.<sup>119</sup>

In summary, no formal theoretical model has yet been proposed that explains either the observed variation in firms' defense levels or how firms choose those levels.<sup>120</sup> This Article attempts to fill both of these gaps by offering a theoretical exploration of the effects of modern takeover defenses that can provide insights into the complicated empirical evidence on these defenses. Our models consider managers' informational advantage in more depth and show how this informational asymmetry may cause defenses to benefit target shareholders, even though managers are unfaithful agents.<sup>121</sup> Our models predict that poison pills increase target shareholder returns and that, in some cases (but not all), the presence of an effective staggered board further increases those returns.<sup>122</sup> Our models thus offer an explanation for the diverse defense levels that corporations exhibit and shed further light on the debate over the nature of regulatory competition.

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<sup>114</sup> Subramanian, *supra* note 3, at 644-48, 665-66.

<sup>115</sup> *Id.* at 655-59.

<sup>116</sup> *Id.* at 644-50.

<sup>117</sup> *See id.* at 650-59 (arguing that hostile bids affect bidder out-of-pocket costs, bidder reputational costs, target costs, and defense-dependent costs).

<sup>118</sup> *See id.* at 662-65 (explaining how corporate insiders might use leverage created by defenses to extract value for themselves instead of for shareholders).

<sup>119</sup> *Id.* at 659-62.

<sup>120</sup> *But see* John C. Coates IV, *Explaining Variation in Takeover Defenses: Blame the Lawyers*, 89 CALIF. L. REV. 1301, 1383-86 (2001) ("[V]ariation in legal takeover defense vulnerability at the IPO stage is explained in large part by variation in the quality of legal advice provided to pre-IPO owner-managers."); Ahn et al., *supra* note 84, at 36 (arguing that firms with low monitoring costs and high advisory needs often benefit from staggered boards).

<sup>121</sup> *See infra* Section II.C.

<sup>122</sup> *See infra* Part III.

## II. THE MODELS

This Article models three different antitakeover regimes. Each is a multi-period model<sup>123</sup> built around a core of shared assumptions about (1) the target corporation (the “Target”) and (2) the incentives of, and the information available to, the Target’s shareholders (the “Shareholders”), its managers and board of directors (the managers and the board of directors, collectively, the “Insiders”<sup>124</sup>), and the would-be acquirer of the Target (the “Acquirer”). Section II.A presents this common core.

This joint framework is then used to model three separate anti-takeover regimes for the Target. Each regime changes the dynamic in which the Acquirer’s bid is considered, and each provides a different level of protection against takeovers. In increasing order of protection, the three regimes are: (1) the Target has no poison pill, (2) the Target has a poison pill but it does not have an effective staggered board, and (3) the Target has both a poison pill and an effective staggered board.

For ease of analysis, regime (1) is modeled in Section II.B (the “No Poison Pill” model), regime (3) is modeled in Section II.C (the “Poison Pill with ESB” model), and regime (2) is modeled last, in Section II.D (the “Poison Pill Without ESB” model). Section II.E then uses the results of the previous Sections’ analyses to build two integrated models: the “Managerialist” model, in which the Insiders choose the Target’s level of antitakeover defenses, and the “Shareholder Primacy” model, in which the Shareholders choose. We proceed to consider the predictions of these two integrated models in light of observed real-world behavior and the welfare implications of the various antitakeover regimes.

### A. *Common Framework: Players and Incentives*

This Article’s models begin with the Target, the Shareholders, and the Insiders. The Target has an overall value,  $v$  (the “Actual Target Value”). This amount reflects the Target’s assets and liabilities, ex-

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<sup>123</sup> A multi-period model is a model with more than one time period. See DREW FUDENBERG & JEAN TIROLE, *GAME THEORY* 70-72 (1991) (providing a mathematical and conceptual definition of a “multi-stage game” and equating “stages” of the game to time periods).

<sup>124</sup> While managers and board members are grouped together as “Insiders,” these groups are not interchangeable and do not have the same incentives. See *infra* Section II.A.

pected future earnings, and other sources of value.<sup>125</sup> In the first period of each model, the Shareholders and the rest of the public at large do not observe  $v$  directly. Instead, they know that  $v$  is within a range of possible values; the lower bound of this distribution is  $v_{\min}$  (the “Minimum Target Value”) and the upper bound is  $v_{\max}$  (the “Maximum Target Value”).<sup>126</sup> The models analyzed in this Article assume that  $v$  is uniformly distributed over this interval; in other words,  $v$  is equally likely to be any value in this range. Accordingly, the public estimates the Target’s value to be the midpoint of this range ( $\bar{v}$ ).<sup>127</sup> This value—the public’s expectation with respect to the Actual Target Value, not the Actual Target Value itself—is reflected in the market price of the Target’s stock (the “Initial Trading Price”).<sup>128</sup>

Consider a fictional company, “AcmeCo.” Assume AcmeCo has assets worth between \$250 and \$750.<sup>129</sup> For example, AcmeCo might be a coal mining company with \$250 of known and proven coal reserves, with additional reserves that have not been fully surveyed but which may be worth as much as \$500, or a pharmaceutical company with approved drugs worth \$250 and additional products under development that could be worth up to \$500 in aggregate. The Minimum Target Value would thus be \$250, and the Maximum Target Value would be \$750. The Initial Trading Price would be \$500, the midpoint between these two values as well as the expected value of AcmeCo’s Actual Target Value.<sup>130</sup> This Article will refer to this “AcmeCo Example” at several points to illustrate other concepts.

In reality, firm values are unlikely to be uniformly distributed,<sup>131</sup> but, as shown in the Appendix,<sup>132</sup> all of the conceptual results present-

<sup>125</sup> The models assume that  $v \geq 0$ .

<sup>126</sup> It follows from the assumption  $v \geq 0$  that  $v_{\min} \geq 0$  and  $v_{\max} \geq 0$ .

<sup>127</sup> See DAVID R. ANDERSON ET AL., STATISTICS FOR BUSINESS AND ECONOMICS 229 (rev. 10th ed. 2009) (stating that the expected value of a uniform continuous probability distribution is the midpoint between the smallest and largest values that the random variable may assume).

<sup>128</sup> See Ronald J. Gilson & Reinier H. Kraakman, *The Mechanisms of Market Efficiency*, 70 VA. L. REV. 549, 551 (1984) (“Despite certain anomalies, numerous studies demonstrate that the capital market responds efficiently to an extraordinary variety of information.” (footnote omitted)).

<sup>129</sup> All dollar amounts in the examples are in millions.

<sup>130</sup> Again, the Initial Trading Price and the expected value of AcmeCo’s Actual Target Value are the same because the Actual Target Value is assumed to be uniformly distributed over this interval.

<sup>131</sup> A more common assumption among sophisticated mathematical analyses is that stock prices are distributed lognormally. See, e.g., Fischer Black & Myron Scholes, *The Pricing of Options and Corporate Liabilities*, 81 J. POL. ECON. 637, 640 (1973) (assuming that stock prices follow a “random walk,” and, thus, that the “distribution of possi-



ed here hold true when firm values follow any given distribution. We assume a uniform distribution within the main text of this Article to capture the point that valuation is uncertain and to simplify the mathematical analysis, which makes it easier to understand what is happening on a conceptual level. Part III considers the implications of using a more realistic probability distribution.<sup>133</sup>

The models assume that the Insiders, by virtue of their positions, have private information about the Target in the first period. In the case of the coal company referenced above, this could mean knowledge of preliminary and unreleased surveys of the unexplored reserves or, in the case of the pharmaceutical company, preliminary results from clinical trials. In other scenarios, this information could include knowledge of research and development projects, contract negotiations, or internal strife at the company. This assumption—that Insiders often have private information that gives them insight into a firm’s value that the public does not have—is a basic tenet underlying insider-trading enforcement policy,<sup>134</sup> and some suggest that it is a primary assumption underlying Delaware corporate jurisprudence.<sup>135</sup>

Accordingly, our models assume that the Insiders’ private information about the Target gives them exact knowledge of the Actual Target Value. So, continuing with our AcmeCo Example, while the public knows only that AcmeCo is worth between \$250 and \$750, the Insiders know its exact value. While this assumption is unlikely to be true in reality, the Insiders, of all the parties involved, are likely to have the best information about the Target’s value, which is the key insight that the models must capture. The models would work similarly as long as the Insiders have the best information about the Tar-

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ble stock prices at the end of any finite interval is lognormal”); Mark Rubinstein, *The Valuation of Uncertain Income Streams and the Pricing of Options*, 7 BELL J. ECON. 407, 417-20 (1976) (deriving the Black-Scholes formula while assuming stock price variables were lognormal); Michael J. Sharpe, *Lognormal Model for Stock Prices 2* (unpublished manuscript), available at <http://math.ucsd.edu/~msharpe/stockgrowth.pdf> (assuming, for calculation purposes, that the set of stock prices is lognormal).

<sup>132</sup> The Appendix does not assume a uniform distribution.

<sup>133</sup> See *infra* subsection III.B.3.

<sup>134</sup> PALMITER & PARTNOY, *supra* note 28, at 833.

<sup>135</sup> See Bernard Black & Reinier Kraakman, *Delaware’s Takeover Law: The Uncertain Search for Hidden Value*, 96 NW. U. L. REV. 521, 521-22 (2002) (arguing that Delaware takeover cases reflect the “hidden value” model “in which a firm’s true economic value is visible to well-informed corporate directors but not to the company’s shareholders or to potential acquirers”); see also Subramanian, *supra* note 3, at 659-62 (adopting a framework resembling the “hidden value” model).

get's value.<sup>136</sup> Assuming that the Insiders' information is exactly accurate is a simplifying assumption that makes the models more tractable and helps to highlight the intuitions underlying them. Part III examines the consequences of relaxing this assumption.<sup>137</sup>

There are a number of processes by which private information is disseminated into the markets over time.<sup>138</sup> For example, companies file new financial statements,<sup>139</sup> they introduce (or do not introduce) new products, articles appear in the financial press, and so forth. The multi-period models presented in this Article incorporate this feature of real-world markets by having the value of the Target be revealed to all parties in a subsequent time period, after the Target is either acquired or remains independent.

The final player is the Acquirer, who makes a cash offer to purchase the Target.<sup>140</sup> The total amount of this offer is referred to as the "Price," *p*.<sup>141</sup> The Acquirer is interested in buying the Target because some sort of profit will result (the "Synergy"), denoted by *s*.<sup>142</sup>

<sup>136</sup> It is also important that the Acquirer does not have information about the Target's value as a stand-alone firm that the Insiders lack. For more on such double-signaling games, see generally Lawrence M. Ausubel et al., *Bargaining with Incomplete Information*, in 3 HANDBOOK OF GAME THEORY WITH ECONOMIC APPLICATIONS 1897 (Robert J. Aumann & Sergiu Hart eds., 2002).

<sup>137</sup> See *infra* subsection III.B.2.

<sup>138</sup> See Gilson & Kraakman, *supra* note 128, at 592-609 (discussing in depth the structure of the information market and its effect on overall market efficiency).

<sup>139</sup> See 15 U.S.C. § 78m (2006) (requiring that issuers of securities file certain documents with the Securities and Exchange Commission); Gilson & Kraakman, *supra* note 128, at 635 n.225 (summarizing the major requirements under section 13 of the Securities Exchange Act of 1934).

<sup>140</sup> In reality, acquirers offer cash, securities, or a combination. Each option has potential costs and benefits. Compare Walter J. Mayer & M. Mark Walker, *An Empirical Analysis of the Choice of Payment Method in Corporate Acquisitions During 1980 to 1990*, Q.J. BUS. & ECON., Summer 1996, at 48, 48; Stewart C. Myers & Nicholas S. Majluf, *Corporate Financing and Investment Decisions when Firms Have Information That Investors Do Not Have*, 13 J. FIN. ECON. 187, 188 (1984); and Wickramanayake & Wood, *supra* note 19, at 7 (all suggesting targets prefer cash offers for simplicity or signaling reasons), with David T. Brown & Michael D. Ryngaert, *The Mode of Acquisition in Takeovers: Taxes and Asymmetric Information*, 46 J. FIN. 653, 667 (1991); Dan S. Dhaliwal et al., *The Effect of Seller Income Taxes on Acquisition Price: Evidence from Purchases of Taxable and Tax-Exempt Hospitals*, J. AM. TAX'N ASS'N, Fall 2004, at 1, 19; Merle Erickson, *The Effect of Taxes on the Structure of Corporate Acquisitions*, 36 J. ACCT. RES. 279, 296 (1998); and James W. Wansley et al., *Abnormal Returns to Acquired Firms by Type of Acquisition and Method of Payment*, FIN. MGMT., Autumn 1983, at 16, 16 (all suggesting targets prefer stock offers because of their superior tax treatment). For simplicity, our analysis is restricted to all-cash offers, but stock offers are functionally identical unless taxes are considered, the use of stock conveys new information about the Acquirer, or the Shareholders cannot sell the stock upon receipt.

<sup>141</sup> In reality, the Price offered would commonly take the form of a price per share of Target stock. However, the two are generally mathematically equivalent, and con-

The models assume that the Synergy constitutes a social gain, and not merely a distributive gain to the Acquirer.<sup>143</sup> While one might believe, a priori, that acquirers gain utility from takeovers at the expense of other parties—such as creditors, workers, customers (in the form of market power), or the government (in the form of tax savings)—empirical studies have generally found that these factors do not adequately explain takeover gains.<sup>144</sup> Even if some takeover gains to the Acquirer are merely distributive, it suffices for our purposes that there be some net social gain (i.e., that distributive effects are not the sole source of gains).<sup>145</sup>

The Synergy may stem from efficiencies created by the Acquirer combining its own business with the Target's, by the Acquirer running the Target's business more profitably, or some combination of the two. For instance, the Synergy could be created by economies of scale,<sup>146</sup> network effects,<sup>147</sup> or by virtue of the Acquirer and Target be-

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sidering the purchase price as a lump sum makes the analysis easier to describe. This Article therefore adopts this convention.

<sup>142</sup> The models assume  $s > 0$ .

<sup>143</sup> This assumption is irrelevant for the analysis in Sections III.B-D, but is important to the welfare analysis of subsection III.E.3.

<sup>144</sup> See, e.g., Erik Devos et al., *How Do Mergers Create Value? A Comparison of Taxes, Market Power, and Efficiency Improvements as Explanations for Synergies*, 22 REV. FIN. STUD. 1179, 1194, 1207-08 (2009) (finding that market power does not explain gains, tax reduction explains a small fraction of gains, and most gains are caused by synergy); C. Edward Fee & Shawn Thomas, *Sources of Gains in Horizontal Mergers: Evidence from Customer, Supplier, and Rival Firms*, 74 J. FIN. ECON. 423, 458 (2004) (finding evidence of improved efficiency but not of gains from monopoly power); Joel F. Houston et al., *Where Do Merger Gains Come From? Bank Mergers from the Perspective of Insiders and Outsiders*, 60 J. FIN. ECON. 285, 315-18, 327 (2001) (finding that cost savings, not market power, explain takeover gains in bank mergers); Gregg A. Jarrell et al., *The Market for Corporate Control: The Empirical Evidence Since 1980*, J. ECON. PERSP., Winter 1988, at 49, 56-58 (concluding that most takeover gains do not come from losses by labor, creditors, or tax revenues, but rather from "beneficial reshufflings of productive assets"); Jensen & Ruback, *supra* note 19, at 9 (suggesting that market power does not explain takeover gains). But see Brian E. Becker, *Union Rents as a Source of Takeover Gains Among Target Shareholders*, 49 INDUS. & LAB. REL. REV. 3, 18 (1995) (finding that losses to labor caused some takeover gains).

<sup>145</sup> See *infra* subsection III.E.3. It is worth noting that the definition of Synergy only includes those social gains that accrue to the Acquirer, which may undervalue total social gains from an acquisition.

<sup>146</sup> See, e.g., HAL R. VARIAN, *INTERMEDIATE MICROECONOMICS: A MODERN APPROACH* 380-86 (8th ed. 2010) (discussing economies of scale).

<sup>147</sup> See, e.g., Jan K. Brueckner & Pablo T. Spiller, *Competition and Mergers in Airline Networks*, 9 INT'L J. INDUS. ORG. 323, 331 (1991) (describing the operation of network effects in the airline industry); Michael Klausner, *Corporations, Corporate Law, and Networks of Contracts*, 81 VA. L. REV. 757, 772-73 (1995) (discussing network effects in corporate law).

ing monopolists of complementary products.<sup>148</sup> Continuing with our AcmeCo coal mining example, the Acquirer might be a mining company with a neighboring mine. By combining AcmeCo's and the Acquirer's separate mines into a single, unified operation, they might be able to mine coal more efficiently, rendering the whole more valuable than the sum of its parts.<sup>149</sup> For example, if the mines were worth \$200 more together than apart, the Synergy would be \$200.

The models assume that both the Shareholders and the Acquirer are risk neutral and only concerned with their monetary returns.<sup>150</sup> Thus, their only goal is to maximize the expected value of their profits. First, consider the incentives facing the Acquirer. If the Acquirer does not purchase the Target, its situation is unchanged; its utility is zero. If the Acquirer successfully acquires the Target, it receives (1) the Actual Target Value, since it now owns the Target, plus (2) the Synergy created by the acquisition, minus (3) the Price that it paid to acquire the Target. Mathematically, this corresponds to  $v + s - p$ . Equivalently, the Acquirer's utility is the sum of the Synergy ( $s$ ) and the difference between the Actual Target Value ( $v$ ) and the Price that the Acquirer pays for the Target ( $p$ ).<sup>151</sup> The difference between  $v$  and  $p$  will be negative if the Actual Target Value is less than the Price the Acquirer pays.

Returning to the AcmeCo Example, if BuyerCo offers to purchase AcmeCo for a Price of \$550, and that offer is accepted, BuyerCo's utility would be the Actual Target Value (which may be anywhere between \$250 and \$750), plus the \$200 Synergy, minus the \$550 Price that the Acquirer paid for the Target. Thus, depending on the Actual Target Value, the Acquirer's utility could range from -\$100 to \$400.<sup>152</sup>

The Shareholders' outcomes are the mirror images of the Acquirer's. If the Acquirer does not purchase the Target, the Shareholders'

<sup>148</sup> See, e.g., Jordan Barry, *When Second Comes First: Correcting Patent's Poor Secondary Incentives Through an Optional Patent Purchase System*, 2007 WIS. L. REV. 585, 601-02 (explaining how monopolists of complementary products create more inefficiencies than a single monopolist would).

<sup>149</sup> See, e.g., *Arch Coal Completes Acquisition of Jacobs Ranch*, YOUR MINING NEWS (Oct. 2, 2009), [http://www.yourminingnews.com/news\\_item.php?newsID=39494](http://www.yourminingnews.com/news_item.php?newsID=39494) (explaining that the acquirer's CEO predicted "substantial operational and financial synergies" from integrating adjoining mines).

<sup>150</sup> Risk-neutral actors are concerned only with their expected returns and not the returns' variability.

<sup>151</sup> This follows because mathematically  $v + s - p = s + (v - p)$ .

<sup>152</sup> The Acquirer's utility is  $v + s - p = v - 350$ . Because  $250 < v < 750$ , it follows that  $-100 < \text{the Acquirer's utility} < 400$ .

utility is the Actual Target Value ( $v$ ).<sup>153</sup> But if the Acquirer does purchase the Target, the Acquirer pays, and the Shareholders receive, the Price ( $p$ ). So, continuing the previous paragraph's example, assume BuyerCo offers to acquire AcmeCo at a Price of \$550. The Shareholders then evaluate whether \$550 is more or less than they think AcmeCo is worth. If they conclude that \$550 is more than AcmeCo's Actual Target Value, they will agree to the sale and receive \$550 worth of utility.<sup>154</sup> If they conclude that \$550 is less than AcmeCo's Actual Target Value, they will not sell and will receive utility equal to the Actual Target Value, which could be anywhere between \$250 and \$750—the Minimum Target Value and the Maximum Target Value, respectively.

Thus, when considering a takeover offer, the Shareholders are only concerned with two things: the Price the Acquirer offers and what they believe the Actual Target Value to be. Put another way, the Shareholders will accept any offered Price ( $p$ ) that is higher than they expect the Actual Target Value ( $v$ ) to be. Similarly, they will reject any offered Price ( $p$ ) that is lower than they expect the Actual Target Value ( $v$ ) to be.<sup>155</sup>

The Insiders differ from the Shareholders and the Acquirer in two distinct ways. First, by virtue of their positions, they have private information about the Actual Target Value. Thus, while the Acquirer calibrates its offer, and the Shareholders evaluate that offer, against what they believe the Actual Target Value to be, the Insiders directly measure the offer against the Actual Target Value.

Second, the Insiders have different incentives than the Shareholders and the Acquirer do. The Insiders are agents of the Shareholders<sup>156</sup> and usually own Target shares. Thus, they have some incentive to encourage a deal if the Acquirer offers a purchase price that is higher than the Actual Target Value and to resist a deal if the reverse is true. But, at the same time, they are not perfect agents of the Shareholders, and they also receive utility by virtue of their employ-

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<sup>153</sup> To simplify the analysis, the models treat the Shareholders as a monolithic whole with a shared joint utility, akin to producer or consumer surplus. Subsection III.B.5 discusses the likely consequences of relaxing this assumption.

<sup>154</sup> For technical reasons, the Appendix assumes that the Shareholders accept an offer when they are indifferent between accepting and rejecting. See *infra* Appendix A.1, Proposition 1.

<sup>155</sup> In other words, the Shareholders will accept the Acquirer's offer to buy the Target for  $p$  if, and only if, the Shareholders believe that  $p \geq v$ .

<sup>156</sup> See *supra* Section II.A.

ment at the Target.<sup>157</sup> If the Target is sold, the Insiders are likely to lose their jobs and any concomitant perquisites.<sup>158</sup> Therefore, they generally will not be as willing to sell the Target as the Shareholders will be. Put another way, the reservation price<sup>159</sup> of Shareholders with perfect information about the Actual Target Value—that is, the lowest Price that such Shareholders would accept for the Target—is less than the Insiders' reservation price.<sup>160</sup> The difference between these two reservation prices is the Insiders' "Private Benefits,"  $b$ .<sup>161</sup> Therefore, the Insiders' utility is either (1) the Actual Target Value ( $v$ ) if the Target remains independent or (2)  $p - b$ , the difference between the Price ( $p$ ) and their Private Benefits ( $b$ ), if the Acquirer purchases the Target.<sup>162</sup>

Conceptually, Private Benefits ( $b$ ) measure the degree to which the Insiders are unfaithful agents of the Shareholders; the larger that  $b$  is, the less faithful they are. If the Insiders were perfectly faithful, and only cared about the Shareholders' returns, Private Benefits ( $b$ ) would be zero, and the Insiders would make the same decision as perfectly informed Shareholders. If the Insiders cared only about keeping their jobs and not at all about the Shareholders' returns, then no offer from the Acquirer, no matter how high, would induce them to sell, and Private Benefits ( $b$ ) would be infinite.

For simplicity, the models assume that the amount of Private Benefits ( $b$ ) is publicly known.<sup>163</sup> This assumption is almost certainly false in reality, but it is adopted to simplify the analysis and make the models more transparent.<sup>164</sup> In reality, Private Benefits are likely to depend, in part, on a number of observable factors, including the corporation's

<sup>157</sup> See Subramanian, *supra* note 3, at 663 (recognizing the divergent interests of shareholders and target employees).

<sup>158</sup> See *supra* note 21 and accompanying text.

<sup>159</sup> The reservation price is the "minimum price a seller will accept" in auctions and the "maximum [price] a buyer will offer." RUTHERFORD, *supra* note 10, at 393.

<sup>160</sup> Cf. Peter H. Eddey & Roger S. Casey, *Directors' Recommendations in Response to Takeover Bids: Do They Act in Their Own Interests?*, 14 AUSTL. J. MGMT. 1, 26 (1989) (finding that initial bids rejected by management are significantly lower than subsequent bids that they accept).

<sup>161</sup> The models assume  $0 \leq b \leq \infty$ .

<sup>162</sup> Like the other actors, the Insiders are assumed to be risk neutral.

<sup>163</sup> In game theory terminology,  $b$  is "common knowledge." See FUDENBERG & TIROLE, *supra* note 123, at 541 ("An event is common knowledge if players know this event, know that other players know this event, and so on *ad infinitum*."); see also Subramanian, *supra* note 3, at 643 (assuming common knowledge in his models).

<sup>164</sup> See *infra* subsection III.B.2 for a discussion of the likely implications of relaxing this assumption.

governance provisions,<sup>165</sup> the presence of activist shareholders,<sup>166</sup> whether the company is managed by family founders,<sup>167</sup> the board's degree of independence,<sup>168</sup> the amount of stock that the managers own,<sup>169</sup> and the size of the Insiders' golden parachutes.<sup>170</sup> In addition, the Shareholders and potential acquirers may be able to make inferences about the magnitude of the Insiders' Private Benefits by evaluating how the Insiders reacted to previous takeover attempts. For example, if the Insiders were receptive to a prior takeover attempt, but it failed for regulatory reasons,<sup>171</sup> that would suggest that the Insiders' Private Benefits are lower. Thus, while the value of Insiders' Private Benefits (*b*) is unlikely to be known exactly, it is likely that the Target's Shareholders and potential acquirers would have some insight into how faithful the Target's management is to shareholder interests.

With this framework of assumptions in place about the actors, their incentives, and their levels of knowledge, we can now consider the various takeover defense regimes within which they interact. We begin by considering the scenario in which the Target has no poison pill (the "No Poison Pill" model) in Section II.B. We then consider the scenarios in which the Target has a poison pill but does or does not have an effective staggered board in Sections II.C (the "Poison Pill with ESB" model) and II.D (the "Poison Pill Without ESB" model), respectively.

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<sup>165</sup> For example, an independent board of directors would be expected to reduce entrenchment and rent-seeking. Dallas, *supra* note 14, at 801-04.

<sup>166</sup> See Alon Brav et al., *The Returns to Hedge Fund Activism*, FIN. ANALYSTS J., Nov.–Dec. 2008, at 45, 47-54 (describing how activist shareholders can lead to better corporate governance and increased firm value).

<sup>167</sup> See Robert Zafft, *When Corporate Governance Is a Family Affair*, OECD OBSERVER, Oct. 2002, at 18, 18-19 (noting that family-run firms do not generally focus on principles of good corporate governance).

<sup>168</sup> Dallas, *supra* note 14, at 801-04. In this context, independence refers to the percentage of outside directors on the board and the board's willingness to exercise independent judgment, challenge the managers' assertions, and accept a takeover offer the managers disfavor. The degree to which these factors are observable varies.

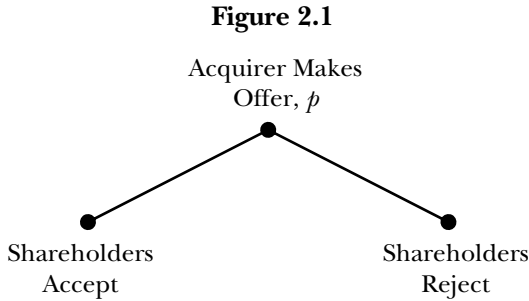
<sup>169</sup> BAINBRIDGE, *supra* note 7, at 198; see also Hartzell et al., *supra* note 9, at 57-58 tbl.7 (finding evidence that takeover resistance does not benefit target shareholders when the target CEO owns little target stock).

<sup>170</sup> Golden parachutes are contractual provisions that provide for large payments in the event of a takeover and certain other circumstances. They potentially allow the Shareholders to affect the Insiders' Private Benefits directly. If the payouts were sufficiently large, the Insiders would have negative private benefits (i.e., they would be willing to sell for a lower price than fully informed shareholders would accept). In practice, this seems to happen rarely, if ever.

<sup>171</sup> See, e.g., John M. Broder, *F.T.C. Rejects Deal to Join Two Giants of Office Supplies*, N.Y. TIMES, Apr. 5, 1997, at 1 (describing the federal government's rejection on anti-trust grounds of a proposed merger of Staples and Office Depot).

B. *The No Poison Pill Model*

This antitakeover regime is the simplest. It reflects a basic tender offer scenario in which the Acquirer makes an offer to the Shareholders, who either accept or reject it.<sup>172</sup> The Insiders have essentially no role in the process. Figure 2.1 depicts this process as an extensive form game.<sup>173</sup>



This scenario is very simple to analyze. The Shareholders, for their part, believe that the Target is worth the Initial Trading Price ( $\bar{v}$ ). The Acquirer's optimal strategy is to offer to buy the Target at a Price ( $p$ ) that is slightly higher than the Initial Trading Price ( $\bar{v}$ ).<sup>174</sup> The Shareholders accept this offer, because the Acquirer's offered Price ( $p$ ) is slightly more than their estimate ( $\bar{v}$ ) of the Actual Target Value.<sup>175</sup> The Acquirer's utility varies depending on the Actual Target Value ( $v$ ), but its expected utility is the Synergy created by the acquisition ( $s$ ) minus the amount that the Price ( $p$ ) exceeds the Initial Trading Price ( $\bar{v}$ ). Since the Acquirer offers a Price ( $p$ ) that is only slightly higher than the Initial Trading Price ( $\bar{v}$ ), the Acquirer's expected utility will approximately equal the Synergy ( $s$ ).

Returning to our AcmeCo Example, in which AcmeCo's Initial Trading Price ( $\bar{v}$ ) is \$500, BuyerCo might offer a Price of \$510. The Shareholders would accept this offer, as doing so would make them \$10 better off than they would otherwise expect to be.

<sup>172</sup> Cf. Subramanian, *supra* note 3, at 642-43 (adopting a similar assumption).

<sup>173</sup> A game is in extensive form when represented as a multi-player decision tree that shows when each player acts and what each player knows when it acts. FUDENBERG & TIROLE, *supra* note 123, at 67, 77-82.

<sup>174</sup> See *infra* Appendix A.1, Proposition 1; see also Subramanian, *supra* note 3, at 643 (providing a numerical example for a similar situation).

<sup>175</sup> Technically, the equilibrium Price is exactly ( $\bar{v}$ ). See *infra* Appendix A.1, Proposition 1.



For its part, BuyerCo would own AcmeCo, which has an expected value of \$500, and gain an additional \$200 in Synergy. In exchange, BuyerCo would pay \$510 to the Shareholders, leaving it with an expected net utility of  $\$500 + \$200 - \$510 = \$190$ . BuyerCo's actual net utility could be as low as -\$60 or as high as \$440, depending on AcmeCo's Actual Target Value. But since BuyerCo is assumed to be risk neutral, calculating its expected utility (\$190) is sufficient.

In the No Poison Pill model, the Acquirer always acquires the Target. This leaves the Shareholders better off than they would have been without a sale, but only slightly. The Acquirer, by contrast, does significantly better, as it keeps the lion's share of the Synergy created by the purchase.

The essential intuition behind this model is that the Insiders are not a factor. The Acquirer deals directly with the Shareholders, and the two parties have similar information sets. The market sets the value of the Target, and the Acquirer pays a slight premium. This facilitates acquisitions, but does not provide the Shareholders with large premiums, both of which benefit the Acquirer. In modern times, attempts to take over publicly traded U.S. firms that lack poison pills are rare, because nearly all U.S. public firms operate with shadow poison pills at all times.<sup>176</sup>

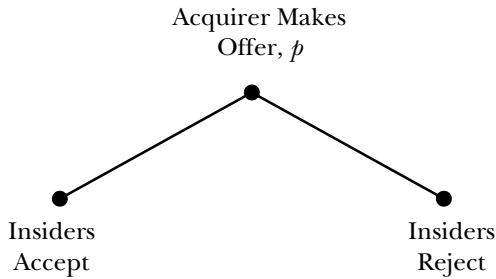
### C. *The Poison Pill with an Effective Staggered Board Model*

In this model, the Acquirer makes an offer to the Insiders, who either accept or reject it. This formulation represents the empirical reality, discussed in Section I.C, that it is prohibitively difficult to take over a target corporation against the wishes of recalcitrant management if the target has a poison pill and an effective staggered board.<sup>177</sup> Since the effective staggered board gives the Insiders the power to make or prevent a deal, they determine whether to accept the Acquirer's offer; the Shareholders are essentially nonparticipants. Figure 2.2 depicts the entire process as an extensive form game.

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<sup>176</sup> See *supra* note 112 and accompanying text.

<sup>177</sup> See Bebchuk et al., *supra* note 41, at 904-05 (concluding that poison pill defenses are for all practical purposes impregnable so long as incumbent insiders retain board control).

**Figure 2.2**

The interaction between the Acquirer and the Insiders differs from the dynamic between the Acquirer and the Shareholders discussed in Section II.B. Because of their private information, the Insiders evaluate the Acquirer's offer against the Actual Target Value, not against the Initial Trading Price. This informational asymmetry creates what is known as an "adverse selection" problem.<sup>178</sup>

The concept of adverse selection describes circumstances in which one party to a transaction cannot directly observe the quality of an item at issue, while its counterparty can. It was first recognized in the context of insurance markets, which remain the canonical examples.<sup>179</sup> Consider a company that sells insurance policies against bicycle theft. Suppose potential purchasers of insurance know whether they face higher- or lower-than-average risks of theft (they know whether they keep their bike in a garage or on the street, the quality of their bicycle lock, etc.), but that the insurance company does not, and must charge all individuals the same amount for insurance.<sup>180</sup> Thus, the cost of insurance is the same for all purchasers, but the expected benefit increases with an individual's risk. Consequently, the higher an individual's risk level, the more likely she will be to purchase insurance.<sup>181</sup> This means that policyholders will not be a representative cross section of the target population; there will be a higher proportion of high-risk individuals and a lower proportion of low-risk

<sup>178</sup> RUTHERFORD, *supra* note 10, at 7.

<sup>179</sup> See VARIAN, *supra* note 146, at 722-23 (describing the phenomenon); see also Barry, *supra* note 148, at 629 (discussing a potential adverse-selection problem in the context of a proposed government program for disseminating intellectual property).

<sup>180</sup> VARIAN, *supra* note 146, at 723; see also George A. Akerlof, *The Market for "Lemons": Quality Uncertainty and the Market Mechanism*, 84 Q.J. ECON. 488, 491-93, 499-500 (1970) (setting out the theory of adverse selection and mechanisms to counter the resulting potential market failure).

<sup>181</sup> VARIAN, *supra* note 146, at 723.

individuals. From the insurance company's perspective, this is an adverse selection.<sup>182</sup>

The interaction between the Acquirer and the Insiders is similar to the interaction between the insurance company and its potential customers. The Acquirer does not know whether the Actual Target Value is higher or lower than the Initial Trading Price. On the other hand, the Insiders know the Actual Target Value, and will only accept an offer if the Price is at least that amount. This selects for instances in which the Actual Target Value is relatively low.<sup>183</sup> Thus, targets that are successfully purchased will not be a representative cross section of targets, but instead those that are worth less than expected—from the acquirer's perspective, an adverse selection of targets.

This effect is exacerbated by the Insiders' Private Benefits; the Insiders will not only require that the Acquirer offer a Price ( $p$ ) that equals or exceeds the Actual Target Value ( $v$ ), but will instead require the Acquirer to offer a Price ( $p$ ) that equals or exceeds the sum of the Actual Target Value ( $v$ ) and the Insiders' Private Benefits ( $b$ ).<sup>184</sup>

This adverse-selection problem significantly disadvantages the Acquirer. If the Acquirer succeeds in purchasing the Target, it will always pay more for the Target than it is worth. The larger the Insiders' Private Benefits, and the more uncertain the Acquirer is about the Actual Target Value (i.e., the larger the difference between the Maximum Target Value and the Minimum Target Value), the worse the Acquirer's position becomes. The one factor working in the Acquirer's favor is that it stands to benefit from Synergies that make the Target uniquely valuable to it. Thus, the Acquirer can pay a Price that is higher than the Actual Target Value and still be better off than if it had not bid for the Target.<sup>185</sup>

<sup>182</sup> *Id.*

<sup>183</sup> If the Acquirer's offer is high enough, the Insiders will always accept it, and purchased Targets will be a representative cross section. Similarly, if the Acquirer's offer is low enough, the Insiders will always reject it. But within this range of values, there will be adverse selection.

<sup>184</sup> The Insiders' decision rule follows from their utility function. They receive utility of  $p - b$  from a sale of the Target; if there is no sale, they retain  $v$ . Thus, they favor a sale if and only if  $p - b \geq v$ . We assume that, when indifferent, the Insiders accept the Acquirer's offer. See *infra* Appendix A.1, Proposition 1.

<sup>185</sup> It can be a bit confusing to talk about the Target's "Actual Target Value," as the Target is of particular value to the Acquirer, who is willing to pay an amount that exceeds the market price because, unlike other market actors, the Acquirer stands to receive synergistic benefits. See Nikhil P. Varaiya, *Determinants of Premiums in Acquisition Transactions*, 8 *MANAGERIAL & DECISION ECON.* 175, 176 (1987) (considering synergies as a reason for acquisition premiums); see also Dean Crawford & Thomas A. Lechner, *Takeover Premiums*

Some numerical examples help clarify these points. Consider again the AcmeCo Example discussed earlier, and assume that the Insiders have Private Benefits ( $b$ ) of \$100. Suppose BuyerCo offers a Price of \$600, the sum of the Initial Trading Price (\$500) and the Insiders' Private Benefits (\$100). AcmeCo's Actual Target Value may be anywhere from \$250 to \$750. The Insiders will only accept BuyerCo's offer if the Actual Target Value is \$500 or less; otherwise, BuyerCo's offered price will be less than the sum of the Actual Target Value and the Insiders' Private Benefits. Accordingly, in those instances in which the Insiders accept BuyerCo's offer, AcmeCo's expected Actual Target Value will not be \$500 (its expected Actual Target Value in general), but \$375 (its expected Actual Target Value given a range of potential Actual Target Values between \$250 and \$500). BuyerCo can anticipate this adverse selection; combined with the \$200 in Synergy that BuyerCo will gain, BuyerCo's expected utility from owning AcmeCo will be \$575. This amount is less than the \$600 Price that BuyerCo would pay. Consequently, at this price, BuyerCo would be better off not attempting to buy AcmeCo.

If, instead, BuyerCo were to offer a Price of \$500, the Insiders would only accept the offer if AcmeCo's Actual Target Value were \$400 or less.<sup>186</sup> Compared to the prior example, the Insiders would accept BuyerCo's offer less frequently (30% of the time instead of 50% of the time<sup>187</sup>), and in those instances in which BuyerCo successfully acquires AcmeCo, AcmeCo's expected Actual Target Value would be lower (\$325 instead of \$375).<sup>188</sup> However, BuyerCo's lower bid compresses the range of possible Actual Target Values for which it successfully acquires AcmeCo relative to the prior example. Reducing this uncertainty lessens BuyerCo's bargaining disadvantage against the Insiders. In the instances in which BuyerCo successfully acquires AcmeCo, its expected utility from owning AcmeCo would be \$525 (a

*and Anticipated Merger Gains in the US Market for Corporate Control*, 23 J. BUS. FIN. & ACCT. 807, 809 (1996) (noting that a bidder's offer price is a function of both the underlying value of the target and the bidder's potential gains from a takeover); Wickramanayake & Wood, *supra* note 19, at 5 (same). It might be more precise, but less intuitive, to say the Acquirer can pay more for the Target than its stand-alone value.

<sup>186</sup> Again, this example assumes that Private Benefits are \$100.  $\$500 - \$100 = \$400$ .

<sup>187</sup> If the Actual Target Value is drawn from a uniform distribution with a minimum of \$250 and a maximum of \$750, the Actual Target Value will be less than or equal to \$500 fifty percent of the time and less than or equal to \$400 thirty percent of the time.

<sup>188</sup> Given that the Actual Target Value is less than or equal to \$400, the expected Actual Target Value would be  $\frac{1}{2}(\$250 + \$400) = \$325$ .

\$325 expected Actual Target Value plus a \$200 Synergy). In exchange for this benefit, BuyerCo would pay \$500.<sup>189</sup> Thus, unlike the last example, BuyerCo is better off than if it had not bid.

If the Insiders' Private Benefits ( $b$ ) are larger than the Synergy ( $s$ ), it is impossible for the Acquirer and the Insiders to strike a mutually beneficial deal.<sup>190</sup> To illustrate this, return to the AcmeCo Example, but assume that the Private Benefits ( $b$ ) are \$300 instead of \$100. The Insiders would only agree to sell if BuyerCo offers a Price that is \$300 more than the Actual Target Value. Because of the Synergy that the acquisition creates, BuyerCo's utility from the acquisition would be \$200 more than AcmeCo's Actual Target Value, but less than the additional \$300 that BuyerCo would have to pay to overcome the Insiders' Private Benefits. Thus, BuyerCo would be better off not bidding for AcmeCo than making any bid that the Insiders might accept.

Assuming that the Synergy ( $s$ ) is larger than the Insiders' Private Benefits ( $b$ ),<sup>191</sup> it is always possible for the Acquirer to make an offer that will make it better off and that the Insiders may be willing to accept.<sup>192</sup> The next question is what offer is optimal for the Acquirer to make.<sup>193</sup>

It is helpful to first establish upper and lower bounds on the range of potential offers that must be analyzed. The upper bound on this range is the sum of the Maximum Target Value ( $v_{\max}$ , which is \$750 in our recurring AcmeCo Example) and the Insiders' Private Benefits ( $b$ ). Since, by definition, the Actual Target Value cannot exceed the Maximum Target Value, such an offer would have to be at least as much as the sum of the Actual Target Value and the Insiders' Private Benefits. Thus, offering that Price guarantees the Acquirer that it will acquire the Target; bidding more would merely mean overpaying and lowering the Acquirer's net utility.<sup>194</sup> Simply put, such an offer would already be too good for the Insiders to refuse.

<sup>189</sup> In those scenarios in which the Insiders reject BuyerCo's offer, BuyerCo receives zero utility, which is what it would have received if it had not bid at all.

<sup>190</sup> See *infra* Appendix A.2, Proposition 4.

<sup>191</sup> Subsequent analysis in Section II.C assumes this to be the case unless explicitly stated otherwise.

<sup>192</sup> The Insiders will sometimes accept an offer that falls between the sum of the Minimum Target Value and the Private Benefits and the sum of the Minimum Target Value and the Synergy. When they do, the Acquirer will receive positive utility.

<sup>193</sup> See *infra* Appendix A.2, Propositions 2-6, for a formal derivation of the Acquirer's optimal offer price.

<sup>194</sup> The Acquirer's net utility is the difference between the value of what the Acquirer receives and the Price it pays; increasing the Price decreases this amount.

On the other hand, the Insiders will reject any offer that is less than the sum of the Actual Target Value and the Insiders' Private Benefits. The Actual Target Value will always exceed the Minimum Target Value.<sup>195</sup> Thus, if the Acquirer offers a Price that is less than or equal to the sum of the Minimum Target Value ( $v_{\min}$ ) and the Insiders' Private Benefits ( $b$ ), its offer will always be refused.

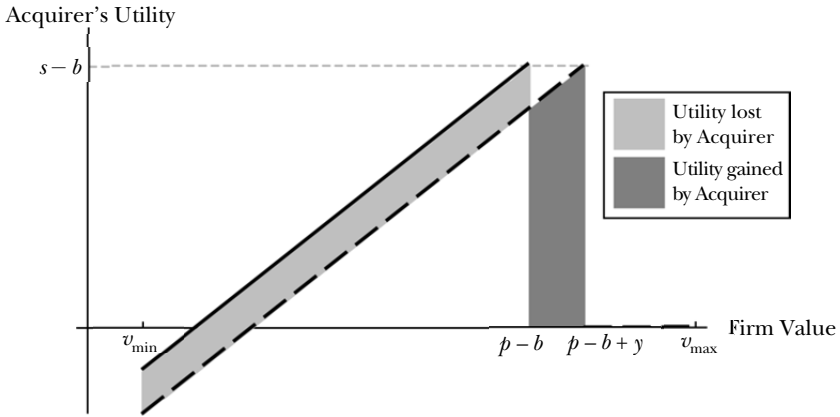
The utility that the Acquirer receives from offering a given Price ( $p$ ) between these upper and lower bounds depends on the Actual Target Value: if the Price ( $p$ ) is greater than or equal to the sum of the Actual Target Value ( $v$ ) and the Insiders' Private Benefits ( $b$ ), the Insiders will accept the Acquirer's offer and sell the Target. In that case, the Acquirer's net utility will be the value of what it receives ( $v + s$ , the sum of the Actual Target Value and the Synergy) minus the Price ( $p$ ) that it pays. Otherwise, the Insiders will reject the Acquirer's offer, and there will be no transaction. The Acquirer will neither pay anything nor take ownership of the Target, and its net utility will therefore be zero.

Consider how the Acquirer's utility changes when it increases the Price that it offers by a small amount,  $y$  (i.e., it increases the Price from  $p$  to  $p + y$ ). In all of the instances in which the Insiders would have accepted a Price of  $p$ , the Acquirer becomes worse off; in both scenarios, it purchases the Target, but in the second scenario, the Acquirer pays a higher price. In all of the instances in which the Insiders reject the Acquirer's new offer, they would also reject the Acquirer's original, slightly lower offer. Therefore, the Acquirer's relative position in these instances is unchanged. Lastly, there are some instances in which the Insiders would reject the original offer, but will accept the new, higher offer. In these instances, the Acquirer is better off. Figure 2.3, below, illustrates these effects.

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<sup>195</sup> Assuming the Actual Target Value ( $v$ ) follows a uniform distribution, the probability that the Target is worth exactly the Minimum Target Value is essentially nil. ANDERSON ET AL., *supra* note 127, at 229.

**Figure 2.3: Effect of Offering a Price Increase of  $y$  on the Acquirer’s Utility as a Function of Target Value,  $v$ <sup>196</sup>**



The amount that the Acquirer expects to lose from raising its Price when its original Price would have been sufficient appears as the lighter shaded region, a parallelogram, with height  $y$  and width  $(p - b) - v_{\min}$ . At the lower bound of the range of possible Prices ( $p$ ), this parallelogram has no width and the Acquirer’s expected loss from a price increase is zero. As the offered Price ( $p$ ) increases, so do the Acquirer’s expected losses from a further increase.

The amount that the Acquirer expects to gain from those instances in which the higher Price would entice the Insiders to sell, but the original Price would not, appears as the darker shaded region. This region is trapezoidal, as shown in Figure 2.3. But, for small increases in price, it is effectively a rectangle, with base  $y$  and height  $(s - b)$ . These expected gains do not change with the original Price.

The optimal Price for the Acquirer to offer is the smaller of (1) the Price at which the expected costs from increasing the Price equal the expected gains from doing so, and (2) the upper bound on the range of potential offers,  $(v_{\max} + b)$  (an “Upper-Bound Offer”).

The first offer corresponds to the Price ( $p$ ) at which the darker and lighter shaded regions in Figure 2.3 have the same area.<sup>197</sup> Mathematically, for small values of  $y$ , this essentially means that  $y(p - b - v_{\min}) = y(s$

<sup>196</sup> Figure 2.3 assumes  $v_{\min} + b < p < v_{\max} + b$ .

<sup>197</sup> This is true because of the assumption that the Actual Target Value follows a uniform distribution. The same principle holds for other distributions, but the math is more complicated because different possible valuations have different probabilities. See *infra* Appendix A.2, Propositions 2, 6.

– *b*). This is true when  $p = v_{\min} + s$ <sup>198</sup> (i.e., when the Price is the sum of the Minimum Target Value and the Synergy).<sup>199</sup> In such a scenario, there will be cases—those instances in which the Actual Target Value is high—in which the Insiders will reject the Acquirer’s offer. Thus, the Acquirer will purchase the Target sometimes, but not always.<sup>200</sup>

For example, assume again that AcmeCo is worth between \$250 and \$750, and is estimated to be worth \$500. Assume further that the Synergy is \$300 and the Insiders’ Private Benefits are \$100. It is optimal for BuyerCo to offer a Price of \$550 (\$250 + \$300). The Insiders will only accept this offer if AcmeCo’s actual value is \$450 or less, which will only be the case 40% of the time.<sup>201</sup> The other 60% of the time, the Insiders will reject BuyerCo’s offer and AcmeCo will not be acquired.

As the Synergy (*s*) increases and all other variables remain constant, the Acquirer’s optimal offer increases correspondingly,<sup>202</sup> as does the probability that the Acquirer successfully purchases the Target. If the Synergy is sufficiently large, the sum of the Minimum Target Value ( $v_{\min}$ ) and the Synergy (*s*) will exceed the upper bound on the offer range established previously. In such a case, it is optimal for the Acquirer to make an Upper-Bound Offer. As noted previously, such a bid ensures that the Acquirer will always purchase the Target.

To summarize the conclusions of this Section, when the Target has a poison pill and an effective staggered board, the Acquirer’s optimal behavior will be one of three possibilities. If the Synergy (*s*) is less than the Insiders’ Private Benefits (*b*), any offer that the Insiders would accept would be worse for the Acquirer than not acquiring the Target. Accordingly, the Acquirer will make an offer that is too low to

<sup>198</sup> If  $y(p - b - v_{\min}) = y(s - b)$ , then  $p - b - v_{\min} = s - b$ . Adding  $b + v_{\min}$  to both sides of this equation yields  $p = s + v_{\min}$ .

<sup>199</sup> Note that the Acquirer is never harmed if the Insiders accept such an offer. In its worst-case scenario, the transaction is a wash—it pays a Price equal to the Minimum Target Value plus the Synergy and, in exchange, it receives the Target, which is worth the Minimum Target Value, plus the Synergy.

<sup>200</sup> The percentage of successful bids equals the ratio of (1) the Synergy minus the Insiders’ Private Benefits to (2) the Maximum Target Value minus the Minimum Target Value, or  $(s - b) / (v_{\max} - v_{\min})$ . See ANDERSON ET AL., *supra* note 127, at 227-29; see also *infra* Appendix A.2, Proposition 2 (establishing the Acquirer’s optimal strategy under a larger set of conditions).

<sup>201</sup> If AcmeCo’s value is uniformly distributed over the interval between \$250 and \$750, the probability that AcmeCo is worth \$450 or less is  $(\$450 - \$250) / (\$750 - \$250) = \$200 / \$500 = 0.4 = 40\%$ .

<sup>202</sup> Recall that the Acquirer’s optimal Price (*p*) in this instance is  $v_{\min} + s$ . Therefore, an increase in the Synergy creates a corresponding increase in the optimal Price. See *infra* Appendix A.2, Proposition 4 (establishing under more general conditions that an increase in the Synergy increases the optimal Price).



be accepted.<sup>203</sup> Alternatively, if the Synergy ( $s$ ) is more than the Insiders' Private Benefits ( $b$ ), the Acquirer's optimal offer will be the minimum of (1) the sum of the Minimum Target Value ( $v_{\min}$ ) and the Synergy ( $s$ ) and (2) the sum of the Maximum Target Value ( $v_{\max}$ ) and the Insiders' Private Benefits ( $b$ ).<sup>204</sup> If it is the former, the Target will only be acquired some of the time; if it is the latter, the Target will always be acquired.<sup>205</sup>

#### D. *The Poison Pill Without an Effective Staggered Board Model*

The Poison Pill Without an ESB model has elements of both the No Poison Pill model<sup>206</sup> and the Poison Pill with ESB model.<sup>207</sup> It treats the takeover attempt as a two-step process. In the first step, the Acquirer makes an offer to the Insiders to buy the Target for a particular Price. This corresponds to a would-be acquirer first attempting to negotiate a "friendly" deal with the target's officers and directors.<sup>208</sup> If the Insiders accept, the Acquirer purchases the Target and there is no second step.

If the Insiders reject the Acquirer's offer, the Acquirer makes the same offer directly to the Shareholders, who can either accept or reject it.<sup>209</sup> If the Shareholders accept, the Target is acquired; otherwise, the Target remains independent. This second step represents a would-be acquirer's attempt to take control of a target's board of directors by waging a proxy fight in conjunction with a tender offer. If the would-be acquirer successfully convinces the target's shareholders to vote for its slate of directors, the new directors will remove the poi-

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<sup>203</sup> See *infra* Appendix A.2, Proposition 3. Technically, the model requires the Acquirer to make an offer. If the Synergy is less than the Insiders' Private Benefits, the offer described in the text will be too low to ever be accepted, as the sum of the Minimum Target Value and the Synergy will be less than the sum of the Minimum Target Value and the Insiders' Private Benefits, which is the lowest Price the Insiders will ever accept. Nonetheless, it is analytically helpful to think of these scenarios as distinct cases.

<sup>204</sup> See *infra* Appendix A.2, Proposition 2.

<sup>205</sup> See *infra* Appendix A.2, Proposition 2.

<sup>206</sup> See *supra* Section II.B.

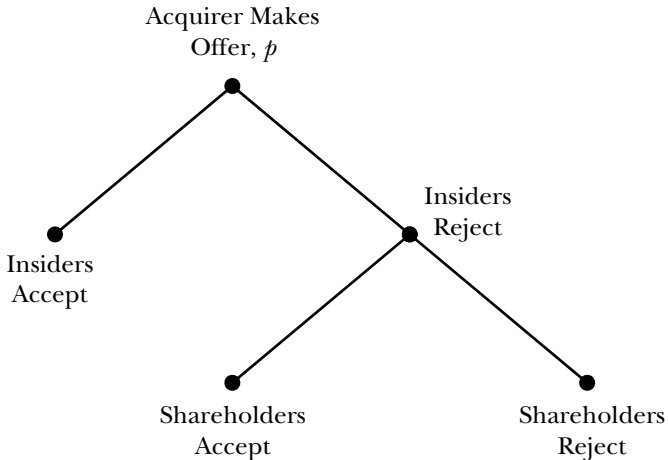
<sup>207</sup> See *supra* Section II.C.

<sup>208</sup> See Gordon, *supra* note 2, at 823-24 (discussing how friendly deals are negotiated in the shadow of hostile takeover attempts and how failed friendly deals can become hostile ones).

<sup>209</sup> See Schwert, *supra* note 49, at 2600 (arguing that deals often shift between being hostile and friendly during negotiations). *But see* Subramanian, *supra* note 3, at 661 n.169 (providing evidence via interviews that friendly and hostile takeovers represent fundamentally different deal tracks).

son pill and clear the way for the takeover of the target corporation. Figure 2.4 depicts the entire process as an extensive form game.

**Figure 2.4: Poison Pill, No Effective Staggered Board**



Analyzing this model is much easier after analyzing the previous two. The analysis starts with the Insiders. The Insiders' incentives are essentially the same as in the Poison Pill with ESB model described in Section II.C. Accordingly, their decision rule is the same: they only accept the Acquirer's offer if the Price is greater than or equal to the sum of the Actual Target Value and the Insiders' Private Benefits.<sup>210</sup> Put another way, if the Insiders favor a particular takeover offer, they should accept it. If they do not, they should reject it; the worst thing that may happen in such an event—the Shareholders accepting the offer—is the same as what would happen if the Insiders had themselves accepted it.

One of the Acquirer's options is to make a bid geared toward the Insiders (an "Insider-Oriented Offer"), in which it offers to buy the Target at a Price ( $p$ ) equal to the sum of the Minimum Target Value ( $v_{\min}$ ) and the Synergy ( $s$ ).<sup>211</sup> The Insider-Oriented Offer is exactly the

<sup>210</sup> See *infra* Appendix A.2, Proposition 6.

<sup>211</sup> Note that this amount may be less than the Initial Trading Price. While, in practice, takeover transactions almost always involve premiums, this is not always the case. Bear Stearns famously agreed to sell itself to J.P. Morgan for \$2 per share, less than 10% of its market value at the time. Matthew Goldstein, *JPMorgan Buys Bear on the Cheap*, BLOOMBERG BUSINESSWEEK (Mar. 16, 2008, 7:47 PM), [http://www.businessweek.com/print/bwdaily/dnflash/content/mar2008/db20080316\\_356646.htm](http://www.businessweek.com/print/bwdaily/dnflash/content/mar2008/db20080316_356646.htm); Yalman Onaran, *Fed*

same as the Acquirer's optimal offer under the Poison Pill with ESB model and, just as in that model, the Insiders will accept it some of the time.<sup>212</sup> For reasons discussed below, if the Insider-Oriented Offer is rejected by the Insiders, it will also be rejected by the Shareholders. Such an offer essentially causes a poison pill with no effective staggered board to yield the same result as a poison pill with an effective staggered board: in both cases, the Acquirer makes the same offer, the Insiders react to it the same way, and their decision is final.

Next, consider what the Acquirer must offer to ensure that the Shareholders always accept (a "Shareholder-Oriented Offer").<sup>213</sup> As Figure 2.4 illustrates, if the Acquirer's offer reaches the Shareholders, the Insiders have already rejected it. The Shareholders can therefore deduce that the Insiders would prefer that the Target remain independent rather than be acquired at the price that the Acquirer is offering. Recall that, by definition, the Insiders are indifferent between accepting and rejecting a takeover offer if the Price ( $p$ ) is equal to the sum of the Actual Target Value ( $v$ ) and the Insiders' Private Benefits ( $b$ ).<sup>214</sup> Thus, if the Insiders reject the Acquirer's offer, the Price ( $p$ ) that the Acquirer is offering must be less than the sum of the Actual Target Value ( $v$ ) and the Insiders' Private Benefits ( $b$ )—or, equivalently, the Actual Target Value is larger than the difference between the Price ( $p$ ) and the Insiders' Private Benefits ( $b$ ).<sup>215</sup> For clarity, we define the difference between the Price ( $p$ ) and the Insiders' Private Benefits ( $b$ ) as the "Insiders' Reservation Price."

By rejecting the Acquirer's offer, the Insiders may communicate new information to the Shareholders about the Actual Target Value. Originally, the Shareholders only knew that the Actual Target Value ( $v$ ) was distributed uniformly between the Minimum Target Value ( $v_{\min}$ ) and the Maximum Target Value ( $v_{\max}$ ). Now, in addition to that fact, they also know that the Actual Target Value is larger than the Insiders' Reservation Price.

*Aided Bear Stearns as Firm Faced Chapter 11, Bernanke Says*, BLOOMBERG (Apr. 2, 2008), <http://www.bloomberg.com/apps/news?pid=21070001&sid=a7coicThgaEE>.

<sup>212</sup> See *supra* Section II.C.

<sup>213</sup> The Shareholder-Oriented Offer may not reach the Shareholders, since the Insiders will sometimes accept it first. However, whenever the Insiders reject such an offer, the Shareholders will accept it. It is somewhat akin to a predetermined price at which the Shareholders agree to sell, like a "Buy It Now" price that enables a buyer on eBay to end an auction by paying a particular preset price. *Buying with the Buy It Now Option*, EBAY, <http://pages.ebay.com/help/buy/how-buy-bin.html> (last visited Dec. 15, 2011).

<sup>214</sup> See *supra* Section II.A.

<sup>215</sup> The inequality  $p < v + b$  is equivalent to  $p - b < v$ .

If the Insiders' Reservation Price is less than the Minimum Target Value ( $v_{\min}$ ), the Shareholders have not learned anything new and cannot update their estimate of the Actual Target Value. Thus, their position and their decision rule are the same as in the No Poison Pill model—they accept the offer so long as the Price is greater than the Initial Trading Price.<sup>216</sup>

On the other hand, if the Insiders' Reservation Price is larger than the Minimum Target Value ( $v_{\min}$ ), the Shareholders can place a new, higher floor on the Actual Target Value. The Shareholders can update their estimate of the Actual Target Value and thereby make a better decision with respect to the Acquirer's offer.<sup>217</sup>

Put another way, the Shareholders now know that the Insiders, who have better information than the Shareholders, but a higher reservation price, oppose the Acquirer's offer.<sup>218</sup> If the Insiders' Private Benefits are too large relative to the offered Price and the range of possible Actual Target Values, the Insiders will always reject the Acquirer's offer, regardless of the Actual Target Value. In that scenario, the Insiders' rejection of the Acquirer's offer gives the Shareholders no new insight, leaving them essentially in the same position as in the No Poison Pill model.<sup>219</sup> In such a case, the Shareholder-Oriented Offer is essentially the Initial Trading Price.

However, if the Insiders' Private Benefits are not so large, the Shareholders can adjust their estimate of the Actual Target Value. The Shareholders will then know that the Actual Target Value is uniformly distributed over a range whose lower bound is the Insiders' Reservation Price and whose upper bound is the Maximum Target Value ( $v_{\max}$ ).<sup>220</sup> Their new estimate of the Actual Target Value will be the midpoint of this range.<sup>221</sup> The Shareholders' optimal decision rule will then be to accept the Acquirer's offer if the Price is greater than or equal to this amount and reject it otherwise.

<sup>216</sup> See *supra* Section II.B. Compare *infra* Appendix A.3, Proposition 7 (providing the shareholders' decision rule in the Poison Pill Without ESB model), with *infra* Appendix A.1, Proposition 1 (providing the shareholders' decision rule in the No Poison Pill model).

<sup>217</sup> See *infra* Appendix A.3, Proposition 7.

<sup>218</sup> Cf. Eddey & Casey, *supra* note 160, at 2 ("In defending against a bid, directors have the opportunity to act in the interests of . . . shareholders, or to act having regard to their own personal interests.")

<sup>219</sup> See *supra* Section II.B.

<sup>220</sup> An interval subset of a uniform distribution is itself a uniform distribution. ANDERSON ET AL., *supra* note 127, at 227.

<sup>221</sup> See *id.* at 229.

Mathematically, this corresponds to accepting the Acquirer's offer whenever it equals or exceeds the difference between the Maximum Target Value ( $v_{\max}$ ) and the Insiders' Private Benefits ( $b$ ).<sup>222</sup> If the range of possible Actual Target Values is sufficiently large relative to the Insiders' Private Benefits, the Shareholder-Oriented Offer will be this amount. Because the Acquirer can always acquire a Target that has a poison pill but no effective staggered board by offering a Price equal to this amount, it will never offer more.

Like the Upper-Bound Offer in the Poison Pill with ESB model, the Shareholder-Oriented Offer defeats the adverse-selection problem.<sup>223</sup> The Shareholder-Oriented Offer is generally more than the Acquirer would pay if the Target did not have a poison pill,<sup>224</sup> but less than the Upper-Bound Offer.<sup>225</sup> There are also instances in which the Shareholder-Oriented Offer allows the Acquirer to profitably acquire the Target even though the Synergy is smaller than the Insiders' Private Benefits,<sup>226</sup> which is never the case under the Poison Pill with ESB model.<sup>227</sup>

We can clarify and illustrate these points with our recurring AcmeCo Example, in which AcmeCo is worth between \$250 and \$750. Assume that the Insiders' Private Benefits are \$300 and that, as in Section II.B, BuyerCo offers a Price of \$510. Whatever the Actual Target Value of AcmeCo is, the Insiders will always reject BuyerCo's offer; even if AcmeCo were merely worth the Minimum Target Value (\$250), BuyerCo's offer (\$510) would be less than the sum of AcmeCo's Actual Target Value (\$250) and the Insiders' Private Benefits (\$300). BuyerCo's offer is then presented to the Shareholders. Since the amount of the Insiders' Private Benefits is publicly known,<sup>228</sup> the

<sup>222</sup> If the Price equals or exceeds the average of the Maximum Target Value and the difference between the Price and the Insiders' Private Benefits, then  $p \geq \frac{1}{2}(p - b + v_{\max}) \leftrightarrow 2p \geq (p - b + v_{\max}) \leftrightarrow p \geq v_{\max} - b$ .

<sup>223</sup> For discussion of the adverse-selection problem, see *supra* notes 178-82 and accompanying text.

<sup>224</sup> If the difference between the Maximum Target Value and the Insiders' Private Benefits is less than the Initial Trading Price, the Shareholder-Oriented Offer will be the same as the Acquirer's optimal offer in the No Poison Pill model. See *supra* Section II.B.

<sup>225</sup> An Upper-Bound Offer equals the sum of the Maximum Target Value and the Insiders' Private Benefits. See *supra* Section II.C.

<sup>226</sup> Suppose AcmeCo is worth between \$250 and \$750, the Synergy is \$100, the Insiders' Private Benefits are \$200, and AcmeCo has a poison pill but no staggered board. The Acquirer's optimal strategy would be to make the Shareholder-Oriented Offer of \$550, which gives the Acquirer an expected utility of \$50 ( $\$500 + \$100 - \$550 = \$50$ ).

<sup>227</sup> See *supra* Section II.C; *infra* Appendix A.2, Proposition 3.

<sup>228</sup> See *supra* note 163 and accompanying text.

Shareholders know that the Insiders would have rejected BuyerCo's offer even if AcmeCo were worth the Minimum Target Value (\$250). Therefore, the Insiders' action tells the Shareholders nothing new about AcmeCo's Actual Target Value. The Shareholders only know that the Actual Target Value of AcmeCo is evenly distributed between the Minimum Target Value (\$250) and the Maximum Target Value (\$750). The Shareholders therefore expect AcmeCo's Actual Target Value to be \$500. The \$510 Price that BuyerCo is offering is more than this amount, so the Shareholders accept BuyerCo's offer.<sup>229</sup>

Now consider a scenario identical to the previous one except that the Insiders' Private Benefits are only \$100. If the Insiders reject BuyerCo's \$510 offer, the Shareholders can deduce that AcmeCo's Actual Target Value is at least \$410, the difference between the Price that BuyerCo is offering (\$510) and the Insiders' Private Benefits (\$100). Until the Insiders rejected BuyerCo's offer, the Shareholders only knew that AcmeCo's Actual Target Value was at least \$250. Initially, the Shareholders expected AcmeCo's Actual Target Value to be the Initial Trading Price (\$500), which is halfway between the Minimum Target Value (\$250) and the Maximum Target Value (\$750). Now, however, the Shareholders know that AcmeCo's Actual Target Value is between \$410 and \$750. Since the Actual Target Value is drawn from a uniform distribution over this interval,<sup>230</sup> the Shareholders' new expectation for AcmeCo's Actual Target Value will be \$580.<sup>231</sup> Since BuyerCo is only offering a Price of \$510, the Shareholders will reject BuyerCo's offer.<sup>232</sup>

Finally, suppose that all of the facts of the previous scenario are unchanged, except that BuyerCo now offers a Price of \$650. If the Insiders reject this offer, the Shareholders can deduce that AcmeCo's Actual Target Value is at least \$550, the difference between the Price that BuyerCo is offering (\$650) and the Insiders' Private Benefits (\$100). Knowing that AcmeCo's Actual Target Value is uniformly distributed between \$550 and \$750, the Shareholders' new expectation for AcmeCo's Actual Target Value will be \$650. Since BuyerCo's of-

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<sup>229</sup> Note that the offered Price (\$510) is more than the difference (\$450) between the Maximum Target Value (\$750) and the Private Benefits (\$300).

<sup>230</sup> See *supra* note 220.

<sup>231</sup> The expected value of a uniformly distributed variable is the mean of the distribution's endpoints. ANDERSON ET AL., *supra* note 127, at 229. Here, that mean is  $\frac{1}{2}(\$410 + \$750) = \frac{1}{2}(\$1160) = \$580$ .

<sup>232</sup> Note that the offered Price (\$510) is less than the difference (\$650) between the Maximum Target Value (\$750) and the Private Benefits (\$100).

ferred Price is \$650, the Shareholders will be indifferent between accepting and rejecting BuyerCo's offer and, by assumption, will accept it.<sup>233</sup> Since the Shareholders will always accept an offer of \$650, the Acquirer will never make a higher offer. Under the No Poison Pill model, the Acquirer could offer less—\$510, for example—and the Shareholders would always accept it because it would be more than the Initial Trading Price.<sup>234</sup> On the other hand, under the Poison Pill with ESB model, the Acquirer must make the Upper-Bound Offer of \$850 to guarantee an acquisition.<sup>235</sup>

Either the Insider-Oriented Offer or the Shareholder-Oriented Offer can be optimal for the Acquirer,<sup>236</sup> depending on the values of the parameters in a specific case.<sup>237</sup> It is somewhat complicated and unintuitive to describe precisely when each strategy dominates.<sup>238</sup> In general, the Insider-Oriented Offer will be optimal when the difference between the Maximum Target Value and the Minimum Target Value is large, but the Synergy and the Insiders' Private Benefits are

<sup>233</sup> Note that the offered Price (\$650) is exactly the difference between the Maximum Target Value (\$750) and the Private Benefits (\$100).

<sup>234</sup> See *supra* notes 174-75 and accompanying text.

<sup>235</sup> See *supra* Section II.C.

<sup>236</sup> Studies suggest that a poison pill, by itself, reduces takeovers little if at all. See sources cited *supra* note 59. But see Coates, *supra* note 6, at 286-97 (critiquing the methodologies of such studies). This could suggest that when the Target has a poison pill but no effective staggered board the Acquirer's optimal strategy will usually be to make the Shareholder-Oriented Offer.

<sup>237</sup> For the Acquirer, the expected utility of the Shareholder-Oriented Offer is the sum of the expected Actual Target Value and the Synergy minus the amount of the Shareholder-Oriented Offer. Mathematically, this is expressed as  $\bar{v} + s - \max(\bar{v}, v_{\max} - b) = \min(s, s + b - \frac{1}{2}(v_{\max} - v_{\min}))$ .

Calculating the Acquirer's expected utility from the Insider-Oriented Offer is more complicated. When the offer is rejected, the Acquirer gets zero utility. When it is accepted, the Acquirer's net utility is the sum of the Actual Target Value and the Synergy, minus the Insider-Oriented Offer, which itself is the sum of the Minimum Target Value and the Synergy. This may be expressed mathematically as  $v + s - (v_{\min} + s) = v - v_{\min}$ . The Actual Target Value, given that the Insiders accept the Insider-Oriented Offer, is uniformly distributed from the Minimum Target Value to the sum of the Minimum Target Value and the difference between the Synergy and the Insiders' Private Benefits. Accordingly, the expected Actual Target Value, given that the Insider-Oriented Offer is accepted, will be the midpoint of this range,  $v_{\min} + \frac{1}{2}(s - b)$ . Therefore, the Acquirer's expected net utility when the Insider-Oriented Offer is accepted is  $v_{\min} + \frac{1}{2}(s - b) - v_{\min} = \frac{1}{2}(s - b)$ . The Insider-Oriented Offer is accepted when the sum of the Minimum Target Value and the Synergy equals or exceeds the sum of the Actual Target Value and the Insiders' Private Benefits. The probability of this occurring is  $(s - b)(v_{\max} - v_{\min})^{-1}$  if  $s \geq b$ , and is zero otherwise. Acquirer's expected utility is thus  $\frac{1}{2}(s - b)^2(v_{\max} - v_{\min})^{-1}$  if  $s \geq b$ , and is zero otherwise. See *infra* Appendix A.2, Proposition 6 (establishing more generally that Acquirer's optimal offer may target either the Shareholders or the Insiders).

<sup>238</sup> See *infra* Appendix A.3, Proposition 7.

small,<sup>239</sup> and the Shareholder-Oriented Offer will be optimal when the reverse is true.<sup>240</sup>

It is helpful to illustrate each of these possibilities with a numerical example. Returning to our recurring AcmeCo example in which AcmeCo's Actual Target Value is between \$250 and \$750, assume that the Insiders' Private Benefits are \$150 and that the Synergy is \$250. If BuyerCo makes the Shareholder-Oriented Offer, it will offer a Price of \$600.<sup>241</sup> Such an offer is always enough to acquire AcmeCo,<sup>242</sup> and BuyerCo's expected utility is the sum of AcmeCo's expected Actual Target Value (\$500) and the Synergy (\$250), minus the Price that BuyerCo offers (\$600). The Shareholder-Oriented Offer therefore gives BuyerCo an expected utility of \$150.

If BuyerCo makes the Insider-Oriented Offer, it will offer a Price of \$500.<sup>243</sup> The Shareholders will always reject this offer, but the Insiders will accept it when AcmeCo's Actual Target Value is less than \$350.<sup>244</sup> On average, this will happen 20% of the time.<sup>245</sup> BuyerCo's expected utility when its offer is accepted will be the sum of AcmeCo's expected Actual Target Value when the Insiders accept BuyerCo's offer (\$300)<sup>246</sup> and the Synergy (\$250), minus the Price BuyerCo offers (\$500). Thus, BuyerCo's expected net utility when its offer is accepted is \$50. Since its offer is accepted 20% of the time, its expected net utility overall is \$10. As BuyerCo would prefer to have \$150 of utility over \$10 of utility, under this set of facts, the strategy of making a Shareholder-Oriented Offer dominates.

<sup>239</sup> When this is true, the expected utility from the Shareholder-Oriented Offer,  $\min(s, s + b - \frac{1}{2}(v_{\max} - v_{\min}))$ , is likely to be negative, whereas the utility from the Insider-Oriented Offer,  $\frac{1}{2}(s - b)^2(v_{\max} - v_{\min})^{-1}$  if  $s \geq b$  and zero otherwise, is never negative. See *infra* Appendix I.C, at Proposition 7.

<sup>240</sup> When  $s - b < v_{\max} - v_{\min}$ , the utility of the Insider-Oriented Offer,  $\frac{1}{2}(s - b)^2(v_{\max} - v_{\min})^{-1}$ , will be less than  $\frac{1}{2}(s - b)$ , which is likely to be less than the expected utility of the Shareholder-Oriented Offer,  $\min(s, s + b - \frac{1}{2}(v_{\max} - v_{\min}))$ .

<sup>241</sup> The Shareholder-Oriented Offer is the difference between the Maximum Target Value ( $v_{\max}$ ) and the Insiders' Private Benefits ( $b$ ). Thus,  $v_{\max} - b = \$750 - \$150 = \$600$ .

<sup>242</sup> The Insiders will accept such an offer 40% of the time ( $(\$600 - \$150 - \$250) / (\$750 - \$250) = \$200 / \$500 = 40\%$ ), and the Shareholders will accept it the other 60% of the time.

<sup>243</sup> The Insider-Oriented Offer is the sum of the Minimum Target Value ( $v_{\min}$ ) and the Synergy ( $s$ ). Thus,  $v_{\min} + s = \$250 + \$250 = \$500$ .

<sup>244</sup> The difference between the Price ( $p$ ) and the Insiders' Private Benefits ( $b$ ) is \$350. If the Insiders know that the Actual Target Value ( $v$ ) is less than this amount, they will accept the offer.

<sup>245</sup>  $(\$500 - \$150 - \$250) / (\$750 - \$250) = \$100 / \$500 = 20\%$ .

<sup>246</sup>  $\frac{1}{2}(\$350 + \$250) = \$300$ .



Now suppose the same facts as above, except that the Insiders' Private Benefits are \$30 instead of \$150. To make the Shareholder-Oriented Offer, BuyerCo must offer a Price of \$720.<sup>247</sup> Such an offer is always enough to acquire AcmeCo,<sup>248</sup> and BuyerCo's expected utility is the sum of AcmeCo's expected Actual Target Value (\$500) and the Synergy (\$250), minus the Price that BuyerCo pays (\$720). BuyerCo's expected net utility is therefore \$30.

Compare this with the outcome when BuyerCo makes the Insider-Oriented Offer of \$500.<sup>249</sup> The Shareholders will always reject such an offer, but the Insiders will accept it if AcmeCo's Actual Target Value is less than \$470, which happens 44% of the time on average.<sup>250</sup> When its offer is accepted, BuyerCo's expected utility will be the sum of AcmeCo's expected Actual Target Value, given that the Insiders accepted BuyerCo's offer (\$360),<sup>251</sup> and the Synergy (\$250), minus the Price BuyerCo pays (\$500). This gives BuyerCo expected utility of \$110 when its offer is accepted. The remaining 56% of the time, BuyerCo's expected utility is zero. Therefore, BuyerCo's expected utility from making the Insider-Oriented Offer is \$48.40. As BuyerCo prefers \$48.40 of utility to \$30 of utility, the Insider-Oriented Offer is optimal.

### E. The Integrated Model

We now integrate the three separate models presented in Sections II.B-D into a single unified model by including an initial step in which the Target's level of takeover defenses is determined. As previously discussed, a target may quickly adopt a poison pill if its state of incorporation allows and it is not otherwise restricted from doing so.<sup>252</sup> Thus, the choice of whether to have a poison pill is best thought of as a question of where a corporation chooses to incorporate and the content of its corporate charter. The choice of whether to install an effective staggered board generally does not relate to the choice of state of incorporation because all states permit staggered boards;<sup>253</sup> the decision to install an effective staggered board is therefore purely a

<sup>247</sup>  $v_{\max} - b = \$750 - \$30 = \$720$ .

<sup>248</sup> The Insiders accept such a bid 88% of the time ( $(\$720 - \$30 - \$250) / (\$750 - \$250) = \$440 / \$500 = 88\%$ ), and the Shareholders will accept it the other 12% of the time.

<sup>249</sup>  $v_{\min} + s = \$250 + \$250 = \$500$ .

<sup>250</sup>  $(\$500 - \$30 - \$250) / (\$750 - \$250) = \$220 / \$500 = 44\%$ .

<sup>251</sup>  $\frac{1}{2}(\$250 + \$470) = \$360$ .

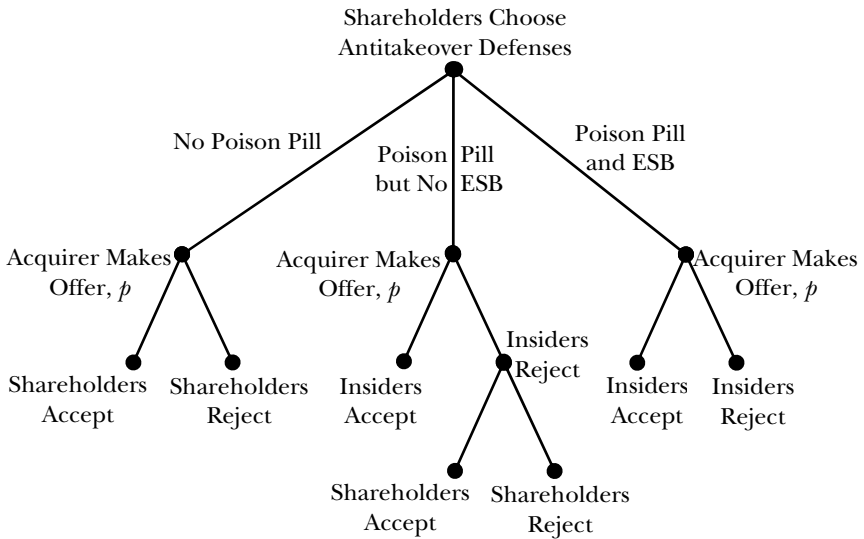
<sup>252</sup> See *supra* notes 35-37 and accompanying text.

<sup>253</sup> See sources cited *supra* note 61.

question of corporate governance and depends solely on the contents of the corporate charter.

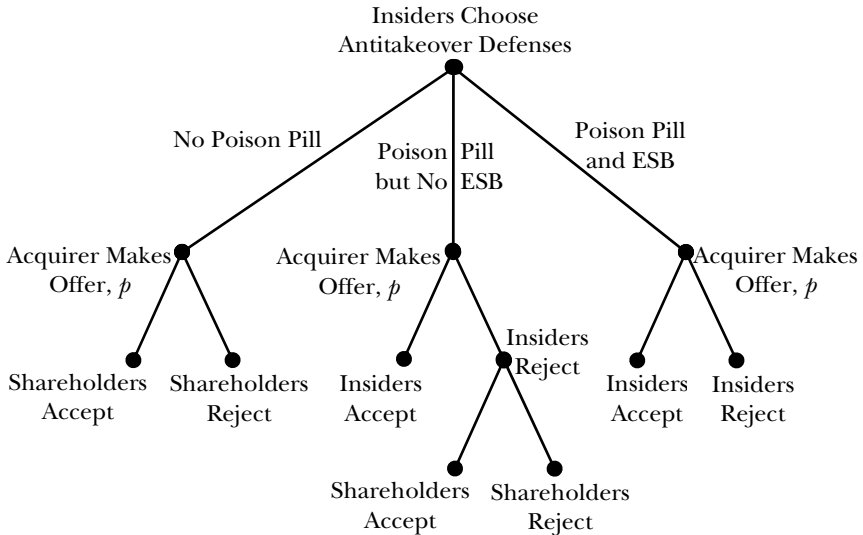
There are competing views on how these decisions are made among different legal and corporate governance regimes. One school of thought, shareholder primacy, suggests that the interests of a firm’s shareholders motivate its choice of the appropriate level of antitakeover defenses.<sup>254</sup> Another school of thought, managerialism, holds that the interests of managers drive firms’ decisionmaking.<sup>255</sup> Figure 2.5 shows the integrated Shareholder Primacy model, and Figure 2.6 shows the integrated Managerialist model.

Figure 2.5: Integrated Shareholder Primacy Model



<sup>254</sup> See Dodd & Leftwich, *supra* note 78, at 267 (arguing that managers choose to incorporate in the state that allows the corporation to earn the most profits, which is what shareholders want); Winter, *supra* note 77, at 256 (arguing that competition in the capital markets will properly incentivize firms choosing among legal regimes).

<sup>255</sup> See BAINBRIDGE, *supra* note 7, at 198 (“Managerialism conceives the corporation as [a] bureaucratic hierarchy dominated by professional managers.”); Cary, *supra* note 77, at 666 (describing modern corporate law as “enabling” managerial independence and as having “watered the rights of shareholders . . . down to a thin gruel”).

**Figure 2.6: Integrated Managerialist Model**

Before considering these integrated models, however, it is necessary to discuss the different context in which they are situated. The models analyzed above address situations in which there is a single potential Acquirer. If there are several potential purchasers willing to pay similar prices, then the Shareholders may have the opportunity to use an auction to raise the eventual purchase price.<sup>256</sup> The availability of the auction mechanism greatly enhances the Target's negotiating leverage and, accordingly, the premiums that the Shareholders are likely to receive.<sup>257</sup> Many takeover attempts, including some of the most dramatic,<sup>258</sup> involve several potential acquirers.<sup>259</sup> Thus, it is po-

<sup>256</sup> See Moeller et al., *supra* note 24, at 217 (performing a statistical study and concluding that competitive pressure among potential bidders lowers their average returns on acquisitions); see also sources cited *supra* note 72.

<sup>257</sup> See sources cited *supra* note 72. But see Audra L. Boone & J. Harold Mulherin, How Are Firms Sold? 16 (Mar. 2006) (unpublished manuscript), available at <http://ssrn.com/abstract=642306> (finding no statistical difference between returns to target shareholders from auctions and negotiations with a single bidder).

<sup>258</sup> See, e.g., BURROUGH & HELYAR, *supra* note 1, at 477-505 (providing a detailed narrative of the frenzied takeover of RJR Nabisco).

<sup>259</sup> Some authors have attempted to measure the degree of competition among acquirers by looking at the number of bidders publicly attempting to acquire the target. See, e.g., Gregor Andrade et al., *New Evidence and Perspectives on Mergers*, 15 J. ECON. PERSP. 103, 106-07 (2001); Schwert, *supra* note 49, at 2601, 2630-32; see also Moeller et al., *supra* note 24, at 208, 210 (recognizing that looking at "whether multiple firms make a public bid for the same target" is underinclusive, but, if one looks at "it as a

tentially problematic to analyze choices of defense levels with the models presented above, which do not apply to such situations.

However, there is a good argument that applying our earlier models in this way is appropriate, with some caveats. When there are multiple potential acquirers, federal laws governing takeover attempts are likely sufficient to allow auctions to form, regardless of the target's level of defenses.<sup>260</sup> Increased defense levels may provide some marginal benefits in this context, but they are likely to be relatively small.<sup>261</sup> In the absence of multiple Acquirers, however, our models predict that disparate levels of defenses will produce substantial differences in expected outcomes.<sup>262</sup> Therefore, it is sensible to use these models to gain insight into the choice of takeover defense levels, even though they only depict a subset of the takeover attempts that a target might encounter.

### 1. Shareholder Primacy Approach

First, consider the Shareholder Primacy model of Figure 2.5. Which level of antitakeover defenses maximizes the Shareholders' expected utility?

*No Poison Pill Model.* If the Target does not have a poison pill, the Target is always acquired at a purchase price that is slightly above the Initial Trading Price. On average, this gives the Shareholders approximately the same utility that they would have received if they had simply continued to own the Target.

*Poison Pill Without ESB Model.* If the Target has a poison pill but no effective staggered board, the Acquirer has two potentially optimal strategies: making the Insider-Oriented Offer or making the Shareholder-Oriented Offer. If the Acquirer makes the Insider-Oriented Of-

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proxy for competition," it suggests that "competition is rare"). A more recent study looked at bidder involvement in the early stages of the M&A process and found that slightly more than half of all takeovers involve multiple bidders. Boone & Mulherin, *supra* note 257, at 2, 29.

<sup>260</sup> See, e.g., 17 C.F.R. § 240.14e-1(a) (2011) (requiring that tender offers remain open for at least twenty business days); see also Subramanian, *supra* note 3, at 630-33 (discussing laws and regulations that limit bidders' abilities to launch short-lived offers).

<sup>261</sup> Cf. Subramanian, *supra* note 3, at 644-45 (pointing out that if a bidder has attractive alternatives and a seller does not, strong legal defenses will be ineffectual in helping a seller negotiate an attractive deal).

<sup>262</sup> Cf. *id.* at 642 (constructing a "stylized takeover negotiation" in which the acquirer and target maintained a "bilateral monopoly" or, in other words, "the only options for the target [were] a deal with the given acquirer or no deal at all, and the only options for the acquirer [were] a deal with the given target or no deal at all").

fer, the Shareholders' utility will be the Actual Target Value (if the Insiders reject the offer) or the Insider-Oriented Offer (if the Insiders accept it). On average, this amount equals or exceeds the Initial Trading Price, which is what they would receive if the Target had no poison pill.

If the Acquirer makes the Shareholder-Oriented Offer, it will always be accepted and the Shareholders' utility will be the Shareholder-Oriented Offer, which is always at least as much as the Initial Trading Price. Accordingly, a poison pill without an effective staggered board always gives the Shareholders at least as much utility as no poison pill and, in many instances, it gives them more.

*Poison Pill with ESB Model.* If the Target has both a poison pill and an effective staggered board, the Acquirer's optimal offer is the lesser of (1) the sum of the Synergy and the Minimum Target Value and (2) the sum of the Maximum Target Value and the Insiders' Private Benefits (the Upper-Bound Offer). The former is the same amount as the Insider-Oriented Offer discussed above. The latter represents the highest amount of utility that the Shareholders can ever receive under any of the models. Thus, the Shareholders always receive at least as much utility as they do when the Target has a poison pill but no effective staggered board, and the Acquirer makes the Insider-Oriented Offer. Accordingly, a poison pill with an effective staggered board always gives the Shareholders at least as much utility as no poison pill, and often gives them more.

Therefore, the Shareholders always prefer having a poison pill, but may or may not prefer an effective staggered board, depending on the circumstances. Specifying when an effective staggered board is optimal is somewhat complicated. The intuition, however, is that the Shareholders must determine how much of a role to give the Insiders in the negotiating process. Giving the Insiders more control over the negotiations can benefit the Shareholders by allowing them to take advantage of the Insiders' superior information and higher reservation price. At the same time, however, the Insiders' incentives diverge from the Shareholders', which can cause them to act against the Shareholders' interests. In the Poison Pill Without ESB model, the Shareholders have the ability to overrule the Insiders through the ballot box safety valve if they decide that the Insiders are not acting in accordance with their interests.<sup>263</sup> In the Poison Pill with ESB model, the

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<sup>263</sup> See Bebchuk et al., *supra* note 41, at 929 (noting that "the ballot box mechanism seems to be a viable mechanism against non-ESB targets" and providing examples of successful takeover attempts that used this mechanism).

ballot box safety valve is foreclosed,<sup>264</sup> and the Insiders largely have a free hand.

It may seem surprising that the Shareholders would ever want to relinquish control over the Insiders. But, because the Insiders are more reluctant to sell than the Shareholders are, this may force the Acquirer to make a higher offer than it would have to make if the Shareholders were controlling the transaction. Thus, by adopting an effective staggered board, the Shareholders are essentially tying their own hands in the hopes that, by giving their negotiators greater power, they will ultimately be able to extract a higher purchase price from the Acquirer.<sup>265</sup> Such measures, in which an actor limits the courses of action available to it, are generally referred to as “commitment devices.”<sup>266</sup>

A somewhat silly but easily understandable example helps illuminate the concept. Suppose you have a painting that you wish to sell, that you have a low reservation price, and that you know relatively little about art. Suppose further that you have a more knowledgeable friend who has a good idea of what the painting is worth and who is willing to help you, but who has a higher reservation price.

One way to structure the negotiating process would be to oversee your friend’s negotiations with potential buyers. If a potential buyer offers a price that you find attractive and that your friend is not willing to accept, you can overrule your friend and accept the offer. This lets you limit the agency costs created by the divergence between your incentives and your friend’s. However, you may end up selling the painting for a lower price than your friend might have secured if you had stayed out of the negotiation. This interaction resembles a takeover attempt under the Poison Pill Without ESB model. Instead of jumping into

<sup>264</sup> See *id.* at 927-29 (finding “not a single ballot box victory against the ESB targets” within the sample takeovers studied).

<sup>265</sup> See Bugeja & Walter, *supra* note 19, at 42-43 (finding that “target firms obtain higher abnormal returns when target management recommends rejection of the offer”); Graham L. Hubbard, *Targeting the Takeover*, 39 PROF. ADMIN. 13, 15 (1987) (Austl.) (finding that winning tender premiums for firms that initially resist offers are significantly greater).

<sup>266</sup> See Werner Raub & Gideon Keren, *Hostages as a Commitment Device*, 21 J. ECON. BEHAV. & ORG. 43, 44 (1993) (analyzing the use of hostages as a commitment device). A commitment device may be valuable if it induces other actors to behave in ways that benefit the committer. For example, in the game of “Chicken”—in which two cars drive directly at each other at deadly speeds until one driver swerves away—throwing your steering wheel out the window is a winning strategy. Christopher R. Leslie, *Rationality Analysis in Antitrust*, 158 U. PA. L. REV. 261, 263 (2010). Commitment devices may also be valuable if they enable a person to act at an early point to control his subsequent actions. Perhaps the most famous literary example is Odysseus having himself tied to the mast so he could not heed the Sirens’ call. Bainbridge, *supra* note 45, at 1-2.

the negotiations directly, the Shareholders check the Insiders by siding with the Acquirer in the proxy fight.

Another possibility is to stay out of the transaction entirely until your friend comes to you with an offer that she thinks you should accept. This guarantees that you do not accept a price that is below your friend's reservation price, which is more than you might have gotten if you were to accept any offer above your own reservation price. If the painting may be extremely valuable, this might be a good tactic. The risk of this approach is that there may be buyers willing to pay your reservation price for the painting, but not your friend's. If so, there will be no sale, even though there are buyers willing to pay a price you would accept. This scenario corresponds to that of a Target with a poison pill and an effective staggered board. By effectively foreclosing a ballot-box revolt, the Shareholders have taken themselves out of the process and left their agents to work out a deal.

The relative benefits of accountability and a commitment device depend on the values of the parameters in a given situation. In general, effective staggered boards tend to be optimal for the Shareholders when the Synergy is very high relative to the Insiders' Private Benefits and the range of possible Actual Target Values. If the Synergy is large enough, the Shareholders will always prefer for the Target to have an effective staggered board.<sup>267</sup> Subsection II.E.2 provides examples that help illustrate these points.

## 2. Managerialist Approach

Analyzing the Managerialist model of Figure 2.6 is easier after the analysis of the Shareholder Primacy model. That analysis showed that the Shareholders always prefer a poison pill, and sometimes prefer an effective staggered board. The Insiders' utility function is the same as the Shareholders', except that the Insiders receive less utility from takeovers. There is always a takeover when the Target has no poison pill,<sup>268</sup> which makes not having a poison pill even less attractive to the Insiders than to the Shareholders. Thus, the Insiders always prefer a poison pill.

There is a greater chance of a takeover when the Target has a poison pill but no effective staggered board than when the Target has both a poison pill and an effective staggered board.<sup>269</sup> Thus, the Insid-

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<sup>267</sup> See *infra* Appendix B, Proposition 9.

<sup>268</sup> See *supra* Section II.B.

<sup>269</sup> See *supra* Sections II.C-D.

ers will favor an effective staggered board in more cases than the Shareholders,<sup>270</sup> but either level of takeover defenses may be optimal for the Insiders in a given instance.<sup>271</sup> It may seem surprising that the Insiders ever prefer to allow the Shareholders to overrule their wishes. The intuition behind this result is that, when Private Benefits are small, the Insiders' utility is very similar to the Shareholders'. In such a case, the Insiders may reap a net benefit from the higher Shareholder-Oriented Offer, even though it leads to some takeovers that the Insiders oppose.

Some numerical examples help illustrate how different parameters cause Shareholders and Insiders to favor different levels of anti-takeover defenses.

*Example 1: Effective Staggered Board Not Optimal for Both.* Assume again that AcmeCo is worth between \$250 and \$750, with an expected value of \$500. Assume further that Private Benefits are \$50 and the Synergy is \$250. If AcmeCo has a poison pill and no effective staggered board, BuyerCo's optimal strategy is to make the Shareholder-Oriented Offer of \$700.<sup>272</sup> This offer is always accepted and results in \$650 of utility for the Insiders and \$700 for the Shareholders.

If AcmeCo has a poison pill and an effective staggered board, BuyerCo's optimal strategy is to make the Insider-Oriented Offer of \$500.<sup>273</sup> When the Insiders accept this offer, their utility is \$450 and the Shareholders' is \$500. When the Insiders reject this offer, the Insiders' and the Shareholders' expected utility is \$600.<sup>274</sup> BuyerCo's offer is accepted 40% of the time and rejected 60% of the time. Accord-

<sup>270</sup> See *infra* Appendix B, Proposition 10.

<sup>271</sup> Cf. Mira Ganor, *Why Do Managers Dismantle Staggered Boards?*, 33 DEL. J. CORP. L. 149, 187-88 (2008) (examining instances in which managers acted to remove staggered boards and finding evidence that unvested options—which are forfeited if the manager is fired but which usually vest immediately in the event of a takeover—influence managers' decisions to destagger boards); Subramanian, *supra* note 82, at 1872-73 (finding that state law takeover protections increase incorporations, but that the states offering the most protection receive fewer incorporations).

<sup>272</sup> BuyerCo's expected utility from making the Shareholder-Oriented Offer is AcmeCo's expected Actual Target Value (\$500) plus the Synergy (\$250) minus the amount of the Shareholder-Oriented Offer (\$700). This totals \$50. When the Insider-Oriented Offer of \$500 is accepted, BuyerCo's expected utility is \$100, which is the sum of the expected Actual Target Value of AcmeCo, given that the Insiders have accepted BuyerCo's offer ( $\frac{1}{2}(\$250 + \$450) = \$350$ ), and the Synergy (\$250) minus the amount of the Insider-Oriented Offer (\$500). The Insider-Oriented Offer is accepted 40% of the time ( $(\$450 - \$250) / (\$750 - \$250) = \$200 / \$500 = 40\%$ ), giving BuyerCo \$40 expected utility.

<sup>273</sup>  $v_{\min} + s = \$250 + \$250 = \$500$ . See *supra* Section II.C.

<sup>274</sup>  $\frac{1}{2}(\$450 + \$750) = \$600$ .



ingly, the Insiders' expected utility is \$540<sup>275</sup> and the Shareholders' expected utility is \$560.<sup>276</sup> In this instance, the Insiders would prefer not to have an effective staggered board (because \$650 > \$540), and neither would the Shareholders (because \$700 > \$560).

*Example 2: Effective Staggered Board Optimal for Insiders but Not Shareholders.* Now suppose the same facts as Example 1, except that Private Benefits are \$150 instead of \$50. If AcmeCo has a poison pill and no effective staggered board, the Shareholder-Oriented Offer remains BuyerCo's best strategy,<sup>277</sup> but that offer is now \$600 instead of \$700. This offer is always accepted and results in \$450 of utility for the Insiders and \$600 for the Shareholders.

If AcmeCo has a poison pill and an effective staggered board, BuyerCo's optimal strategy is to make the Insider-Oriented Offer of \$500.<sup>278</sup> When the Insiders accept this offer, their utility is \$350 and the Shareholders' utility is \$500. When the Insiders reject this offer, the Insiders' and the Shareholders' expected utility is \$550.<sup>279</sup> The Insiders accept BuyerCo's offer 20% of the time and reject it 80% of the time.<sup>280</sup> Accordingly, the Insiders' expected utility is \$510<sup>281</sup> and the Shareholders' expected utility is \$540.<sup>282</sup> The Insiders would prefer to have an effective staggered board in this instance (because \$450 < \$510), but the Shareholders would prefer not to have one (because \$600 > \$540).

*Example 3: Effective Staggered Board Optimal for Both.* Example 2's result changes, however, if BuyerCo stands to receive \$450 of Synergy from acquiring AcmeCo and all other parameters are held constant. If AcmeCo has a poison pill but no effective staggered board, the

<sup>275</sup>  $40\%(\$450) = \$180$ .  $60\%(\$600) = \$360$ .  $\$180 + \$360 = \$540$ .

<sup>276</sup>  $40\%(\$500) = \$200$ .  $60\%(\$600) = \$360$ .  $\$200 + \$360 = \$560$ .

<sup>277</sup> BuyerCo's expected utility from making the Shareholder-Oriented Offer is AcmeCo's expected Actual Target Value (\$500) plus the Synergy (\$250) minus the amount of the Shareholder-Oriented Offer (\$600). This totals \$150. Even when the Insider-Oriented Offer of \$500 is accepted, BuyerCo's expected utility is only \$50. BuyerCo's utility in such an instance would be the sum of the Actual Target Value of AcmeCo and the Synergy (\$250), minus the amount of the Insider-Oriented Offer (\$500). The expected Actual Target Value of AcmeCo, given that the Insiders have accepted BuyerCo's \$500 offer, is \$350 ( $\frac{1}{2}(\$250 + \$350) = \$300$ ).  $\$300 + \$250 - \$500 = \$50$ .

<sup>278</sup>  $v_{\min} + s = \$250 + \$250 = \$500$ . See *supra* Section II.C.

<sup>279</sup>  $\frac{1}{2}(\$350 + \$750) = \$550$ .

<sup>280</sup>  $(\$350 - \$250) / (\$750 - \$250) = \$100 / \$500 = 20\%$ .

<sup>281</sup>  $20\%(\$350) = \$70$ .  $80\%(\$550) = \$440$ .  $\$70 + \$440 = \$510$ .

<sup>282</sup>  $20\%(\$500) = \$100$ .  $80\%(\$550) = \$440$ .  $\$100 + \$440 = \$540$ .

Shareholder-Oriented Offer of \$600 remains BuyerCo's best option.<sup>283</sup> As before, this offer is always accepted and results in \$450 of utility for the Insiders and \$600 of utility for the Shareholders.

If AcmeCo has a poison pill and an effective staggered board, BuyerCo's optimal strategy is to make the Insider-Oriented Offer of \$700. When the Insiders accept this offer, their utility is \$550 and the Shareholders' utility is \$700. When the Insiders reject this offer, both the Insiders and the Shareholders receive expected utility of \$650.<sup>284</sup> The Insiders accept BuyerCo's offer 60% of the time and reject it 40% of the time.<sup>285</sup> Accordingly, the Insiders' expected utility is \$590<sup>286</sup> and the Shareholders' expected utility is \$680.<sup>287</sup> On these facts, the Insiders prefer to have an effective staggered board (because \$590 > \$450) as do the Shareholders (because \$680 > \$600).

### 3. Social Welfare Analysis

After having considered two possible ways in which takeover defense levels may be chosen, the analysis shifts to which takeover defense levels maximize social welfare. The social welfare function is defined as the sum of the Shareholders' and Acquirer's utilities.<sup>288</sup> This function does not account for distributional concerns between the Acquirer and the Shareholders. This seems sensible, as both the Acquirer and the Target are likely to be large public firms owned by diffuse and diversified shareholders.<sup>289</sup>

In the event of a takeover, the Acquirer's utility will be the sum of the Actual Target Value and the Synergy, minus the Price that it pays

<sup>283</sup> The analysis resembles that of note 277, *supra*, except BuyerCo's utility is increased by \$200 when it makes the Shareholder-Oriented Offer and when the Insider-Oriented Offer is accepted.

<sup>284</sup>  $\frac{1}{2}(\$550 + \$750) = \$650$ .

<sup>285</sup>  $(\$550 - \$250) / (\$750 - \$250) = \$300 / \$500 = 60\%$ .

<sup>286</sup>  $60\%(\$550) = \$330$ .  $40\%(\$650) = \$260$ .  $\$330 + \$260 = \$590$ .

<sup>287</sup>  $60\%(\$700) = \$420$ .  $40\%(\$650) = \$260$ .  $\$420 + \$260 = \$680$ .

<sup>288</sup> While the displacement that the Insiders suffer from a takeover of the Target is a real social loss, for nearly all public targets, the takeover's effect on the utility of the Acquirer and the Shareholders will likely dwarf its effect on the utility of the Insiders. See Daines & Klausner, *supra* note 71, at 106-10 (evaluating the private benefit hypothesis); Klausner, *supra* note 84, at 768-69, 774 (discussing the notion that managers may "buy" defenses from shareholders and identifying the necessary price as between 1% and 5% of the firm's value). We therefore disregard it for simplicity.

<sup>289</sup> See Easterbrook & Fischel, *supra* note 2, at 8 (assuming that investors hold "diversified portfolios"); Easterbrook & Fischel, *supra* note 71, at 1167 n.17 ("Both theory and evidence suggest that if . . . risks are diversifiable, shareholders will be indifferent to them . . .").

for the Target. The Shareholders' utility will be the Price that the Acquirer pays for the Target. Since our chosen social welfare function adds the Acquirer's and the Shareholders' utilities, the Price drops out of the calculation and social welfare equals the Actual Target Value plus the Synergy.

If there is no takeover, the Acquirer's utility will be zero and the Shareholders' utility will be the Actual Target Value. Social welfare is therefore the Actual Target Value. Thus, a takeover increases social welfare.<sup>290</sup>

Accordingly, the socially optimal level of takeover defenses is the level that maximizes the number of takeovers. Given the choice of social welfare function, this makes intuitive sense. Successful takeovers create social gains by increasing the size of the economic pie by the amount of the Synergy. Other than the Synergy, the elements of the social welfare function are either exogenous (the Actual Target Value) or transfer payments that cancel out (the Price that the Acquirer pays and that the Shareholders receive).<sup>291</sup>

Therefore, the socially optimal level of takeover defenses is No Poison Pill, which always leads to takeovers at small premiums.<sup>292</sup> Unfortunately, the analyses in subsections II.E.1 and II.E.2 suggest that neither the Shareholders nor the Insiders should be expected to choose the socially efficient level of takeover defenses.

### III. FURTHER PREDICTIONS AND EXPANSIONS

This Part attempts to place these models into further context. It begins by exploring several interesting implications of the models. It then compares these predictions to the findings of empirical studies and suggests additional empirical work that could be done to test the extent to which these models accurately reflect reality. Finally, it addresses several of the models' simplifying assumptions and the likely consequences of relaxing them.

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<sup>290</sup> Recall the earlier assumption that the Synergy represents a social gain, and not merely a distributive one. *See supra* text accompanying note 143.

<sup>291</sup> *Cf.* Easterbrook & Fischel, *supra* note 2, at 8 (arguing that raising takeover premiums does not benefit investors because they are diversified, so any extra returns they receive as target shareholders is canceled out by the reduced returns they receive as shareholders of acquirers).

<sup>292</sup> *Supra* Section II.B.

### A. Predictions and Implications

#### 1. State Competition for Charters and Federalization of Corporate Law

Our models have direct implications for the postulated “race to the top” or “race to the bottom” created by state-level control of corporate law. Contrary to prior theory, our models suggest that the proliferation of rules making takeovers easier or more difficult may not necessarily suggest either a race to the bottom or a race to the top. Similarly, a firm that raises or lowers its takeover defenses is not necessarily responding to managerial or shareholder interests, respectively.<sup>293</sup> Although Insiders often prefer a higher level of takeover defenses than Shareholders do in our models, Shareholders never choose the lowest level of defenses and Insiders do not always choose the highest.<sup>294</sup> The Shareholders’ and Insiders’ preferences depend on the Target’s particular characteristics, and there are instances in which both groups prefer the same level of defenses.<sup>295</sup>

At the same time, our models reinforce the notion that the postulated race to the top is a competition to serve the interests of the corporation’s shareholders and not the interests of society as a whole. The models predict that a corporation’s shareholders will always prefer to have a poison pill because they enable the shareholders to extract distributional gains from the Acquirer.<sup>296</sup> This is socially inefficient because it reduces the frequency of socially beneficial takeovers and reduces the Acquirer’s incentives to engage in them,<sup>297</sup> but this is immaterial to the Shareholders, who are self-interested actors concerned with their own utility. Diversified shareholders would be willing to relinquish their firm’s takeover defenses if other firms (who are

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<sup>293</sup> Cf. EASTERBROOK & FISCHEL, *supra* note 71, at 171-74 (arguing that increased defenses are always against shareholder interests); Ganor, *supra* note 271, at 185 (arguing that managers who dismantle staggered boards further shareholder interests); Subramanian, *supra* note 82, at 1801 (contending that states offering the most protection against takeovers receive fewer incorporations due to shareholder backlash).

<sup>294</sup> See *supra* subsections II.E.1-2.

<sup>295</sup> See *supra* subsections II.E.1-2.

<sup>296</sup> See *supra* Section II.E; see also Daines & Klausner, *supra* note 71, at 85 (finding that in their sample no company at the IPO stage adopted a charter provision prohibiting itself from adopting takeover defenses in the future).

<sup>297</sup> See Easterbrook & Fischel, *supra* note 71, at 1174-75 (arguing that any strategy that discourages tender offers reduces welfare to both shareholders and society); see also Schwartz, *supra* note 71, at 230 (summarizing Easterbrook and Fischel’s argument that auctions are inefficient).

potential acquisition targets for their firm) would do so as well, but state-level control does not provide any mechanism that would allow for such a bargain. This suggests that, even if there is a race to the top, such a race will not produce socially optimal laws.

This result potentially offers some support for nationalizing corporate law. Given the choice between all firms having poison pills and no firms having poison pills, diversified shareholders would have incentives to choose socially optimal laws. Thus, one might expect that the imposition of a uniform rule would eliminate the poison pill, or at least reduce its potency. On the other hand, nationalizing corporate law would remove the interstate competitive pressures that currently shape corporate law and which may be expected to produce socially optimal laws in those instances in which shareholders' interests mirror those of society. In addition, many countries with nationalized corporate law insulate corporations from takeover attempts to a greater degree than U.S. states generally do.<sup>298</sup> Thus, state-level control of corporate law may well be the best practical option, even though it falls short of the ideal regulatory scheme.<sup>299</sup>

## 2. Variation in Corporate Takeover Defense Levels

The question of why public firms display a variety of different levels of takeover defenses has been disputed for some time.<sup>300</sup> As the conventional argument holds that either a race to the top or a race to the bottom would produce uniformity in defense levels, our models provide one mechanism for resolving what some have seen as a paradox.<sup>301</sup>

The models imply that public firms choose varying levels of takeover defenses based on complicated interactions between multiple pa-

<sup>298</sup> Cf. William D. Schnepfer & Mauro F. Guillén, *Stakeholder Rights and Corporate Governance: A Cross-National Study of Hostile Takeovers*, 49 ADMIN. SCI. Q. 263, 263-64 (2004) (providing statistics showing that many more takeovers were announced in the United States than in other countries).

<sup>299</sup> See EASTERBROOK & FISCHER, *supra* note 71, at 222 (arguing that competition among states, even if imperfect, creates a powerful tendency for states to enact laws that benefit investors); ROMANO, *supra* note 77, at 75 ("Acknowledging that the track record of most states in takeover regulation raises serious questions concerning the efficacy of state competition does not imply that national regulation of takeovers is the solution to an imperfect federal system."); Stephen J. Choi & Andrew T. Guzman, *Choice and Federal Intervention in Corporate Law*, 87 VA. L. REV. 961, 973-74 (2001) (concluding that while state control is "imperfect," it is still preferable to federal intervention).

<sup>300</sup> See Daines & Klausner, *supra* note 71, at 88-89 (discussing competing theoretical views on the matter).

<sup>301</sup> Cf. Coates, *supra* note 120, at 1308 (arguing that the variation in defense levels is attributable to differences in legal counsel).

rameters.<sup>302</sup> Both these parameters themselves and the Target's level of takeover defenses affect the likelihood of a takeover and the premium that the Shareholders expect to receive in such an event.<sup>303</sup> Accordingly, studies that consider the effects of different takeover defenses would be likely to reach conflicting and confusing results because their effects would vary depending on the qualities of the Target. Indeed, the empirical literature on this issue is complex and contradictory.<sup>304</sup> Both studies that have looked for connections between particular firm characteristics and defense levels<sup>305</sup> and those that have examined the effects of defense levels on premiums<sup>306</sup> have yielded mixed and inconsistent results.<sup>307</sup> Studies examining the effects of adopting takeover defenses on a target's stock price have been similarly patchy,<sup>308</sup> even in those that have found significant price reactions, the price effects on individual firms have varied widely.<sup>309</sup> These models offer a potential explanation for these varied results.

More specifically, the models predict that corporations with the highest expected Synergies should be the most likely to have effective staggered boards. These companies likely include highly technology-intensive companies and companies with nontraditional businesses. There is some recent empirical evidence that supports this prediction. For example, companies that are backed by venture capital funds are more likely to possess these qualities than the average publicly traded company. Such companies also have a higher incidence of takeover defenses at the time of their initial public offering than other corporations do.<sup>310</sup> Defenses also appear more frequently among firms in industries where takeovers are more common and in which managerial performance is easier to observe, and were not correlated with a proxy for high managerial private benefits.<sup>311</sup> These firms correspond to po-

<sup>302</sup> See *supra* subsection II.E.2; *infra* Appendix.

<sup>303</sup> See *supra* Sections II.C-E; *infra* Appendix.

<sup>304</sup> See *supra* note 6 and accompanying text.

<sup>305</sup> See sources cited *supra* note 84.

<sup>306</sup> See sources cited *supra* note 86.

<sup>307</sup> See Coates, *supra* note 6, at 291-97, 306-10, 328-36 (providing evidence that pill adoptions do not affect bids, that poison pills do not correlate with other firm traits, and that certain other antitakeover measures have not been shown to affect bids).

<sup>308</sup> See *id.* at 318 ("Some [studies] show positive price reactions, some negative; but mixed or insignificant results predominate . . . . [Even significant] results are not robust . . . ."); sources cited *supra* note 87.

<sup>309</sup> See Coates, *supra* note 6, at 318-19 ("Even in studies showing negative results, positive price reactions are observed in forty to fifty percent of the sample . . . .").

<sup>310</sup> Daines & Klausner, *supra* note 71, at 96 tbl.2.

<sup>311</sup> *Id.* at 103-04, 108-10.

tential Targets that are likely to have high Synergy and that are likely to have Insiders with low Private Benefits.<sup>312</sup> Another study has found that staggered boards increase value when firms have higher advisory needs (i.e., firms that are large and complex) and low monitoring costs (i.e., firms in which it is easier to observe managerial performance).<sup>313</sup> Such firms seem somewhat more likely than their peers to have large potential Synergies and to have Insiders with low Private Benefits.<sup>314</sup>

### 3. Post-Takeover Attempt Performance

The models presented in this Article can be used to make predictions with respect to the future performance of the Acquirer and Target after a takeover attempt. The models are predicated on the assumption that the Acquirer is a self-interested, rational actor. Consequently, they predict that the Acquirer should realize positive expected returns from successful takeovers under all levels of defenses.<sup>315</sup> However, empirical studies have generally found that acquirers' returns from takeovers are either indistinguishable from zero or slightly negative.<sup>316</sup> While these studies typically do not distinguish between takeover attempts involving only one acquirer and attempts involving several, these findings still suggest that some degree of hubris or "winner's curse," which the

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<sup>312</sup> *But see* Daines & Klausner, *supra* note 71, at 102 (rejecting the hypothesis that defenses are adopted to create bargaining power).

<sup>313</sup> Ahn et al., *supra* note 84, at 36.

<sup>314</sup> On the other hand, the measure of monitoring costs is positively correlated with research and development and with the relative value of intangible assets, both of which might be correlated with large synergy. *Id.* at 6.

<sup>315</sup> *See supra* Sections II.B-D. If a rational Acquirer received negative returns from takeovers, it would not pursue them. Assuming that the Shareholders choose the Target's level of defenses, it is difficult to predict the Acquirer's relative returns across acquisitions involving different levels of defenses because Targets choosing each level of defenses will have different features. *See supra* subsection II.E.2.

<sup>316</sup> *See, e.g.,* Babu G. Baradwaj et al., *Bidder Returns in Interstate and Intrastate Bank Acquisitions*, 5 J. FIN. SERVICES RES. 261, 266-67 (1992) (finding negative returns); David E. Bellamy & Walter M. Lewin, *Corporate Takeovers, Method of Payment, and Bidding Firms' Shareholder Returns: Australian Evidence*, 9 ASIA PAC. J. MGMT. 137, 146 (1992) (finding small positive returns for cash deals and negative returns for share exchange offers in Australian takeovers); Robert F. Bruner, *Does M&A Pay? A Survey of Evidence for the Decision-Maker*, J. APPLIED FIN., Spring-Summer 2002, at 48, 56 (synthesizing data from studies from 1971 to 2001 and finding zero returns); Sylvia C. Hudgins & Bruce Seifert, *Stockholder Returns and International Acquisitions of Financial Firms: An Emphasis on Banking*, 10 J. FIN. SERVICES RES. 163, 177 (1996) (finding zero returns); Jensen & Ruback, *supra* note 19, at 16 (reviewing the merger literature and finding returns near zero); Elias Raad & H.K. Wu, *Acquiring Firms' Stock Returns: Methods of Payment, Change in Leverage, and Management Ownership*, 18 J. ECON. & FIN. 13, 25 (1994) (finding positive returns from cash mergers and negative returns from stock-financed mergers).

models in this Article do not capture, may play an important role in acquirer behavior.<sup>317</sup> Nonetheless, studies that examine the joint benefits of an acquisition to acquirers and target shareholders consistently find that takeovers offer significant positive returns.<sup>318</sup> Accordingly, all of the models' predictions with respect to the social welfare effects of various defenses remain applicable.

Similarly, the models all assume that the Shareholders are profit-driven rational actors. Recall that, in the Poison Pill Without ESB model, the Shareholders will sometimes reject the Acquirer's offer by voting against it in a proxy fight based on their beliefs about the Actual Target Value. If the Shareholders are, in fact, profit-driven rational actors, the market value of the Target should, on average, rise above the amount of the Acquirer's rejected offer within a relatively short period of time.<sup>319</sup> This happens at times in individual cases, but the authors of this Article have not been able to locate a study that has considered whether a rise in market value following shareholder rejection happens systematically. Studies have shown that the stock prices of targets that reject a takeover offer do not, on average, climb above the offered price within a reasonable amount of time.<sup>320</sup> However, these results are entirely consistent with the models' predictions when the Insiders control whether the offer is accepted.<sup>321</sup>

<sup>317</sup> See, e.g., Nikhil P. Varaiya & Kenneth R. Ferris, *Overpaying in Corporate Takeovers: The Winner's Curse*, FIN. ANALYSTS J., May-June 1987, at 64, 64-65 (1987) (explaining the winner's curse phenomenon that affects competitive takeovers and arguing that bidders discount their bids to account for the phenomenon).

<sup>318</sup> See, e.g., Bruner, *supra* note 316, at 51-56 (analyzing three decades' worth of merger studies and finding that takeovers result in a positive economic gain); Devos et al., *supra* note 144, at 1192 (finding joint gains of ten percent in mergers of large industrial firms); Houston et al., *supra* note 144, at 303-05 (finding joint gains in bank mergers); Hudgins & Seifert, *supra* note 316, at 177 (finding that targets receive abnormal benefits while acquirers roughly break even); Jensen & Ruback, *supra* note 19, at 22 ("[T]argets gain and bidders do not appear to lose . . .").

<sup>319</sup> If, on average, this does not occur, rational and self-interested Shareholders would improve their utility by accepting the Acquirer's offer in all such situations.

<sup>320</sup> See Frank H. Easterbrook & Gregg A. Jarrell, *Do Targets Gain from Defeating Tender Offers?*, 59 N.Y.U. L. REV. 277, 283, 289-92 (1984) (citing findings showing that successful defenses result in losses for target shareholders); Gilson, *A Structural Approach to Corporations*, *supra* note 72, at 857-58 (showing that, on average, the shareholders of targets that rejected offers received an approximately five percent lower rate of return than they would have realized if the offers had been accepted).

<sup>321</sup> See *supra* Sections II.C-D.



#### 4. Optimal Level of Private Benefits

These models also have a surprising implication with respect to the level of Insiders' Private Benefits that is optimal for the Shareholders. The Insiders' Private Benefits are what make their interests diverge from those of the Shareholders, and it is these divergences that create the socially inefficient agency costs that corporate law tries to eliminate.<sup>322</sup> Accordingly, conventional wisdom suggests that the Shareholders' utility is maximized when there are no Private Benefits and decreases monotonically as Private Benefits increase.<sup>323</sup>

The models presented herein contradict this conventional wisdom, however. In general, these models predict that the level of Insiders' Private Benefits that maximizes Shareholder utility is non-zero.<sup>324</sup> The reason for this divergence from the conventional wisdom is that, as discussed earlier, the Insiders' Private Benefits can function as a commitment device for the Shareholders.<sup>325</sup> Thus, our models suggest that Shareholders should not be expected to police Insiders perfectly, even if they had the ability to do so.

#### B. *Relaxing Simplifying Assumptions*

The models presented in this paper incorporate several simplifying assumptions to emphasize conceptual points.<sup>326</sup> While relaxing some of these assumptions reduces the models' predictive power, their validity is not predicated on any of these assumptions. In fact, relaxing certain of these assumptions actually strengthens some of the models' predictions.

##### 1. Parameter Independence

The models presented in this Article do not require that there be any direct links between the Target's level of takeover defenses, the Insiders' Private Benefits, the distribution of possible Actual Target Values, and the Synergy. These assumptions simplify and, in some

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<sup>322</sup> See BAINBRIDGE, *supra* note 7, at 207 (explaining that the separation of ownership and control will sometimes result in some form of self-dealing by directors and that "corporate law is best understood as a mechanism for constraining [self-dealing]"); see also *supra* Section II.A.

<sup>323</sup> Cf. Easterbrook & Fischel, *supra* note 71, at 1175 (arguing that any defenses reduce overall shareholder welfare).

<sup>324</sup> See *infra* Appendix A.2, Proposition 6.

<sup>325</sup> See *supra* Section II.E.1.

<sup>326</sup> See *supra* Section II.A.

ways, generalize the models. In reality, however, a number of relationships might plausibly exist between these items.

For example, it seems likely that an increase in Private Benefits would have a negative effect on a corporation's value. High levels of Private Benefits likely correspond to the Insiders shirking responsibilities or receiving lavish perks, both of which would reduce the corporation's value (i.e., the Actual Target Value). Similarly, the more the Insiders shirk their responsibilities or line their own pockets, the more the Acquirer may stand to gain (in the form of Synergy) from taking over the Target and installing better management.<sup>327</sup> On the other hand, if the Insiders shirk their responsibilities, they may be less likely to endow the Target with other qualities that create Synergy (e.g., new technologies, access to new markets, etc.).<sup>328</sup> Therefore, the effect of Private Benefits on Synergy seems uncertain. Additionally, the Actual Target Value may affect the Synergy.<sup>329</sup> For example, a new technology could be twice as valuable to a particular acquirer as to anyone else.

However, none of these relationships directly affects the analysis of the No Poison Pill, Poison Pill with ESB, or Poison Pill Without ESB models. In each, the parameters are fixed throughout the time period at issue, and all parameters except the Actual Target Value are observable.<sup>330</sup> Therefore, there is no theoretical problem with treating each of these variables as being determined independently and simply

<sup>327</sup> See Larry H.P. Lang et al., *Managerial Performance, Tobin's Q, and the Gains from Successful Tender Offers*, 24 J. FIN. ECON. 137, 152 (1989) (concluding that targets with poor-quality management achieve greater premiums when purchased by high-quality acquirers); Henri Servaes, *Tobin's Q and the Gains from Takeovers*, 66 J. FIN. 409, 418 (1991) (same).

<sup>328</sup> See Harry Henderson & Alan Gart, *Key Variables Explaining Acquisition Premiums for Large Commercial Banks*, BANK ACCT. & FIN., Summer 1999, at 29, 31 (finding that targets with higher returns on assets receive higher book-value premiums); Peter S. Rose, *The Impact of Mergers in Banking: Evidence from a Nationwide Sample of Federally Chartered Banks*, 39 J. ECON. & BUS. 289, 291 (1987) (contending that targets achieving a higher rate of return on their common equity and greater operating efficiency than their acquirers in the pre-takeover announcement period receive higher premiums); Hany A. Shawky et al., *Determinants of Bank Merger Premiums*, J. ECON. & FIN., Spring 1996, at 117, 126 (finding that targets with a high return on assets receive higher premiums).

<sup>329</sup> If the Actual Target Value positively affects the Synergy, this will exacerbate the adverse-selection problem that the Acquirer faces in the Poison Pill Without ESB and Poison Pill with ESB models. This makes the Shareholder-Oriented Offer more attractive to the Acquirer, as it overcomes the exacerbated adverse-selection problem. There are similar implications when the Target has a poison pill and an effective staggered board.

<sup>330</sup> It is not problematic that the Actual Target Value is not directly observable; its value cannot affect any other parameter, because all other parameters are already fixed and observable to all parties.

noting that it is likely that when Private Benefits are high that the Actual Target Value may be low, and the Synergy may be either high or low. Thus, the models' assumption that these relationships do not exist is not problematic.

## 2. Invariable and Observable Parameters

The logic above does not apply if the parameters are not fixed and observable. If either of these requirements is not satisfied, parameter interdependence becomes more of a concern. It is instructive to consider each requirement separately.

If the parameters are not fixed throughout the period being analyzed, then changing one of the parameters could affect the others. There are several ways in which this could have an impact on the un-integrated models presented in Sections II.B-D—the Actual Target Value and the Synergy likely fluctuate with changing economic conditions, and the Insiders' Private Benefits may also<sup>331</sup>—but this issue is most likely to affect the integrated models analyzed in Section II.E.

Since adopting an effective staggered board makes a corporation less susceptible to a takeover,<sup>332</sup> it seems plausible that the reduced disciplining effect of the market for corporate control will cause the Insiders to shirk their responsibilities and increase their perks.<sup>333</sup> This would increase their Private Benefits, which could affect the other parameters through the mechanisms discussed above. Thus, a corporation's choice of its level of takeover defenses would not simply depend upon the parameters specified in the model; the level of takeover de-

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<sup>331</sup> For example, the Insiders may be more supportive of a takeover if economic conditions are favorable and thus conducive to them finding comparable employment if they lose their jobs after a takeover. The Insiders' preferences may also fluctuate with personal events in their lives.

<sup>332</sup> See Bebchuk et al., *supra* note 41, at 928-29 (discussing how an effective staggered board can give a target substantial time to remain independent and explaining that no attempt to take control of the board of directors of a target with an effective staggered board has been successful).

<sup>333</sup> See Pornsit Jiraporn & Yixin Liu, *Capital Structure, Staggered Boards, and Firm Value*, FIN. ANALYSTS J., Jan.-Feb. 2008, at 49, 53-54 (showing that firms with staggered boards tend to choose debt structures that favor management interests over shareholders'); Klausner, *supra* note 84, at 762 (arguing that management compensation tends to rise more at firms with effective staggered boards than at comparable firms without such boards). On the other hand, without defenses, Insiders may change their behavior in ways that may reduce firm value. Cf. Stout, *supra* note 2, at 856-61 (arguing that insiders at companies without staggered boards may engage in other behaviors to discourage takeovers and that these behaviors may be more costly to shareholders than existing defenses).

fenses chosen would also affect those parameters. Comparing the implications for each of the parties of different levels of takeover defenses would become more difficult, but the net effect would be to make the Shareholders less favorably inclined toward takeover defenses and the Insiders more so, which would reinforce the analyses of subsections II.E.1 and II.E.2.

If some parameters are related, but are not precisely observable, any new information that the parties receive about one parameter also gives them new information about others, which may in turn provide new information about yet others.<sup>334</sup> This concern is particularly trenchant because several of the parameters utilized by each model are unlikely to be directly observable.

This is likely to have the largest effect on the Poison Pill Without ESB model. If the Insiders do not directly observe the Actual Target Value and the Shareholders do not directly observe the Insiders' Private Benefits, this will reduce (but not eliminate) the Shareholders' ability to draw inferences about the Actual Target Value from the Insiders' actions,<sup>335</sup> which itself will affect the bids that the Acquirer is likely to make.<sup>336</sup>

The parties' inability to directly observe several of the parameters increases the uncertainty under which the parties interact. This likely operates to decrease the models' predictive power. However, it does not seem to change the qualitative nature of their predictions. For example, in the Poison Pill Without ESB model, the Acquirer should still

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<sup>334</sup> See Coates, *supra* note 6, at 297-306 (discussing how instituting a poison pill sends varied and complicated signals that have different implications for firm value); Sudip Datta & Mai Iskandar-Datta, *Takeover Defenses and Wealth Effects on Securityholders: The Case of Poison Pill Adoptions*, 20 J. BANKING & FIN. 1231, 1248-49 (1996) (concluding that the value of a company's bonds drops when it adopts a poison pill, but not the value of its equity, largely because of what that action signals about the firm's management, plans, and prospects); Strong & Meyer, *supra* note 86, at 82-84 (discussing the signaling effects of poison pills).

<sup>335</sup> Mathematically, the equations become somewhat complex because the Insiders' action gives insight into the sum of the Actual Target Value and the Insiders' Private Benefits and, as discussed above, the Insiders' Private Benefits likely affect the Actual Target Value.

<sup>336</sup> The Acquirer's optimization problem is even more complex, because it depends upon the Shareholders' decisionmaking rule. See *supra* Section II.D. In addition, the instances in which the Shareholders accept the Acquirer's offer after the Insiders reject it are unlikely to constitute a representative cross section from the distributions of the Insiders' Private Benefits and the Actual Target Value. The amount of the Insiders' Private Benefits is likely to affect the Actual Target Value, and both may affect the Synergy. Both the Actual Target Value and the Synergy factor directly into the Acquirer's utility function. See *supra* Section II.A.

have two possible optimal strategies: one directed toward the Insiders and one directed toward the Shareholders. In short, real-world interactions are likely to be significantly messier than these simplified models.

### 3. Uniform Distribution

All of the models analyzed in this Article adopt the simplifying assumption that the Actual Target Value is drawn from a uniform distribution. However, sophisticated financial analyses are far more likely to model a public company's value using a lognormal distribution.<sup>337</sup>

A detailed discussion of the properties of the lognormal distribution is beyond the scope of this Article.<sup>338</sup> For our purposes, it suffices to say that the relative frequency of values close to the mean is generally higher for a lognormal distribution than for a uniform distribution. Similarly, above a certain point, the lognormal distribution tapers off relatively rapidly. This likely makes the Insiders' private information less valuable and the adverse-selection problem that the Acquirer faces less important. It also suggests that, in many instances, the Insider-Oriented Offer's probability of success will be more extreme (i.e., closer to zero or one) than it would be if the Actual Target Values were uniformly distributed. Similarly, the Shareholder-Oriented Offer—the smallest Price at which the Shareholders will override the Insiders and vote in favor of a takeover—is likely to be smaller, because extremely high Actual Target Values are relatively less frequent.<sup>339</sup> In sum, the models' predictive power is likely to decrease, but the predictions seem unlikely to change qualitatively.

### 4. Zero Transaction Costs

An obvious difference between the models presented here and the real world is the absence of transaction costs. In the models, the only cost the Acquirer incurs is the Price of a takeover, if there is

<sup>337</sup> See *supra* note 131 and accompanying text.

<sup>338</sup> A continuous random variable follows a lognormal distribution if the natural logarithm of that variable follows a normal distribution. Kunio Shimizu & Edwin L. Crow, *History, Genesis, and Properties*, in LOGNORMAL DISTRIBUTIONS: THEORY AND APPLICATIONS 1, 1 (Edwin L. Crow & Kunio Shimizu eds., 1988). A lognormal distribution is often used when a random variable is the product of many positive independent random variables. Financial returns over successive periods are often assumed to be independently distributed random variables.

<sup>339</sup> This is because the relative probability of high-value outliers in the Actual Target Value in the lognormal distribution is likely (but not always) smaller than in a uniform distribution. This makes the Shareholders more likely to accept a lower offer.

one.<sup>340</sup> Meanwhile, the Target, the Insiders, and the Shareholders incur no costs whatsoever in connection with the possible takeover.<sup>341</sup>

In reality, this is not the case. Acquirers and targets spend millions pursuing and resisting takeover attempts.<sup>342</sup> They retain law firms, accounting firms, investment banks, and other expensive advisors.<sup>343</sup> They incur many of these costs regardless of whether the takeover attempt ultimately succeeds.<sup>344</sup> In addition, takeover attempts absorb a great deal of the time and energy of executives on both sides of the transaction, which also entails costs, including opportunity costs.<sup>345</sup> Takeover costs are likely to increase with the level of the Target's takeover defenses.<sup>346</sup>

The effects of these costs are twofold. First, they reduce Acquirers' willingness to make bids, particularly bids with a low probability of success.<sup>347</sup> Second, by reducing the gains to the Target, they reduce the

<sup>340</sup> See *supra* Section II.A.

<sup>341</sup> See *supra* Section II.A.

<sup>342</sup> See, e.g., Mark Scott, *BHP Billiton Ends Rio Tinto Takeover Battle*, BLOOMBERG BUSINESSWEEK (Nov. 25, 2008), [http://www.businessweek.com/globalbiz/blog/europe/insight/archives/2008/11/bhp\\_billiton\\_ends\\_rio\\_tinto\\_takeover\\_battle.html](http://www.businessweek.com/globalbiz/blog/europe/insight/archives/2008/11/bhp_billiton_ends_rio_tinto_takeover_battle.html) (noting that BHP Billiton spent over \$450 million in its failed takeover attempt of rival mining company Rio Tinto).

<sup>343</sup> See, e.g., David Lat, *When \$1,000 an Hour Is Not Enough*, N.Y. TIMES, Oct. 3, 2007, at 6 (discussing the use of "premium billing," the charging of a premium over hourly billings, by law firms specializing in mergers and acquisitions). The costs of takeovers are significant enough that they have attracted the attention of the IRS. See *INDOPCO, Inc. v. Comm'r*, 503 U.S. 79, 88-90 (1992) (holding that expenses incurred in a friendly takeover, such as legal and investment banking fees, are not deductible as "ordinary and necessary" business expenses); I.R.S. Tech. Adv. Mem. 2005-21-032 (Feb. 11, 2005) (ruling that expenses incurred to terminate a merger so that a corporation could enter into a different merger could not be deducted as "ordinary and necessary" business expenses); I.R.S. Tech. Adv. Mem. 89-27-005 (Mar. 27, 1989) (determining that expenses incurred in procuring a white knight to defend against a hostile takeover could be deducted as "ordinary and necessary" business expenses), *vacated*, I.R.S. Tech. Adv. Mem. 89-45-003 (Aug. 1, 1989).

<sup>344</sup> See *supra* note 342.

<sup>345</sup> See Subramanian, *supra* note 3, at 646 (explaining that "acquisitions generally require substantial managerial time and effort" and that "managerial attention can only be focused on one acquisition at a time").

<sup>346</sup> See *id.* at 655-59.

<sup>347</sup> See Easterbrook & Fischel, *supra* note 2, at 6-7 (arguing that the inability of acquirers to appropriate the full value of costs incurred when searching for potential targets will lead to a reduction in the number of tender offers); Easterbrook & Fischel, *supra* note 71, at 1178-79 (explaining that information costs incurred by acquirers to research targets may reduce the number of tender offers). Takeover costs may also cause Acquirers to make either higher or lower bids than they would otherwise; the increased relative cost of a failed bid favors higher bids, but the reduced gains from a successful takeover favor lower bids.

Shareholders' net benefits from takeovers and takeover defenses, while increasing the Insiders' aversion to takeovers and their affinity for takeover defenses. This causes the Shareholders to prefer a lower level of takeover defenses, and the Insiders to prefer a higher level of defenses, than each would in the absence of transaction costs. This would reinforce the analyses of subsections II.E.1 and II.E.2 with respect to Shareholders' and Insiders' relative preferences regarding takeover defense levels. But, while the absolute size of transaction costs is substantial, their relative size compared to the value of the publicly traded Target is likely to be fairly insignificant in many instances.<sup>348</sup> Thus, the effects of transaction costs may be minimal at best.<sup>349</sup>

### 5. Shareholder Uniformity

The models treat the Shareholders as a unified whole, with solely profit-oriented incentives. Both of these assumptions are potentially problematic.

First, certain Shareholders may hold Target shares for reasons other than profit. For example, an employee benefit plan may hold Target shares, and it may oppose a takeover anticipated to result in layoffs.<sup>350</sup> If the Target is in a "green" business, environmentalists may purchase its stock partly to support its efforts.<sup>351</sup> To the extent that the Shareholders are not profit-driven and oppose a takeover, this Article's models will not be good predictors of the Shareholders' or the Acquirer's behavior. However, this concern is unlikely to apply to most takeovers, since most shares in U.S. public corporations are owned by investors whose primary motivation is profit.

Second, even strictly profit-driven Shareholders are not a homogeneous group, but rather an amalgamation of separate actors with different valuations of the Target. As the Shareholders have all chosen to use their scarce investment dollars to purchase and hold Target shares,

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<sup>348</sup> See, e.g., Scott, *supra* note 342 (noting that the price BHP offered for Rio Tinto fluctuated between \$150 billion and \$62 billion during its takeover attempt, which implies that the \$450 million in costs that BHP incurred in its attempt constituted, at most, between 0.3% and 0.7% of the amount of the necessary bid).

<sup>349</sup> Cf. *supra* note 59 (citing research finding that poison pills have little to no effect on the likelihood of a takeover occurring).

<sup>350</sup> See E. Richard Brownlee II & Robert F. Bruner, *The Leveraged ESOP as a Takeover Defense: The Case of Polaroid Corporation*, 1 J. M&A ANALYSIS 3, 7-15 (1990) (giving an example of a firm that arguably beat back a takeover attempt through the use of an employee benefit plan).

<sup>351</sup> See, e.g., GREEN CHIP STOCKS, <http://www.greenchipstocks.com> (last visited Dec. 15, 2011) (tracking investment opportunities in the alternative-energy sector).

the mean of their valuations is likely higher than the general public's estimate of the Actual Target Value.<sup>352</sup>

Thus, in order to convince a majority of Shareholders to sell their Target shares, the Acquirer would have to offer a Price that is significantly above the Initial Trading Price. This would lead to higher premiums from tender offers in the absence of a poison pill than the No Poison Pill model predicts. Average takeover premiums from tender offers before the growth of the poison pill were significantly above this level.<sup>353</sup>

However, the net effect of the Shareholders being a non-uniform group with diverse beliefs as to the Target's value generally does not change the underlying dynamics of this Article's models. This effect applies across all of the models to raise the Price that the Acquirer must offer in any bid targeted toward the Shareholders. This reduces, but does not eliminate, the gap between such a bid and one targeted at the Insiders.

#### CONCLUSION

This Article attempts to fill an important gap in the academic literature on takeover defenses by introducing formal models of several different target defense levels that incorporate target insiders' private information and imperfect incentives. Through analysis of these models, this Article offers new insight into the forces that drive the adoption of takeover defenses and provides additional perspectives on confusing and conflicting empirical findings.

These models suggest that a corporation's optimal level of defenses depends on several factors, and that variations in these factors may explain the diverse levels of takeover defenses observed in practice. In general, corporations for which an acquirer is likely to pay the highest premiums are likely to implement stronger takeover defenses. And, while corporate insiders generally prefer a higher level of defenses than shareholders do, shareholders do not prefer the lowest level of defenses and insiders do not always prefer the highest. The level of

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<sup>352</sup> Though, of course, some may continue to hold their stock for tax purposes or other reasons, and not because of a belief that Target is undervalued.

<sup>353</sup> See Douglas V. Austin, *The Financial Management of Tender Offer Takeovers*, FIN. MGMT., Spring 1974, at 37, 40 (finding premiums between five and thirty-five percent in most tender offers made from 1968 to 1972). Since many tender offers are only operative if a majority of outstanding shares are tendered, shareholders with higher valuations of a target implicitly function as somewhat of a commitment device for those with lower valuations. See *supra* note 266 and accompanying text.



takeover defenses preferred by each varies depending upon the circumstances. Therefore, the diversity of defense levels that corporations exhibit poses no challenge either to theories that shareholders control choices of defense levels or to theories that managers control such choices.

The models also suggest that modern defenses enable target shareholders to extract value from acquirers by empowering corporate insiders. Even though the insiders are unfaithful agents, their informational advantage and higher reservation price can ultimately redound to the shareholders' benefit. However, this benefit to shareholders does not benefit society. This result has implications for the optimal degree of federal involvement in corporate law, as a race to the top by states to serve shareholder interests would still not create socially optimal corporate laws. Further research is necessary to assess the degree to which these models accurately reflect real-world behavior and to measure the relative importance of the forces captured in these models compared to other phenomena.

## APPENDIX

In this Appendix, we formally state our models and prove the results stated in the text.

A. *The Models*

The models are composed of three agents: the Shareholders, the Acquirer, and the Insiders.

The value of the target firm (the “Target”) is  $v$ , which is distributed according to the cumulative distribution function  $F$  with a smooth partial distribution function  $f$  on  $[v_{\min}, v_{\max}]$ . Let  $\bar{v}$  be the mean of the distribution. The true value of the Target  $v$  is known by the Insiders but is not known by the Shareholders or the Acquirer.

If the Target is bought at a price  $p$ , then the Acquirer receives  $v + s - p$ , where  $s \geq 0$  is the Synergy that the Acquirer has with the Target and  $p$  is the price paid; otherwise the Acquirer receives 0. If the Target is bought, the Shareholders obtain  $p$ , and receive  $v$  otherwise. Finally, the Insiders, whose Private Benefits are represented by  $b$ , obtain  $p - b$  when the Target is sold and  $v$  when the Target is not sold. We assume that  $b > 0$ . That is, the Insiders strictly prefer not to sell the Target when the price offered is equal to the value of the Target.

We consider three models in the subsections below. The solution concept is subgame perfect Nash equilibrium. We refer to an equilibrium that is unique, except over a set of realizations of the random variable  $v$  with a measure of zero, as a generically unique subgame perfect Nash equilibrium. We also make several statements that describe how a set changes in response to a parameter. In this case, a set  $A(t)$  is weakly increasing in  $t$  if  $\min A(t) \leq \min A(t')$  and  $\max A(t) \leq \max A(t')$  for all  $t < t'$ .

## 1. The No Poison Pill Model

In this model, the game proceeds as follows:

1. The Acquirer makes an offer  $p$ .
2. The Shareholders decide to accept or reject.
3. Payoffs are realized.

It is clear that in the second stage the Shareholders strictly prefer to sell for any  $p > \bar{v}$ , strictly prefer not to sell for any  $p < \bar{v}$ , and are indifferent at  $p = \bar{v}$ . Hence, we have the following result:

*Proposition 1.* The unique subgame perfect Nash equilibrium of the No Poison Pill game is for the Acquirer to offer  $\bar{v}$  to the Shareholders and for the Shareholders to accept.

2. The Poison Pill with an Effective Staggered Board Model

In this model, the game proceeds as follows:

1. The Acquirer makes an offer  $p$ .
2. The Insiders decide to accept or reject.
3. Payoffs are realized.

It is clear that in the second stage the Insiders will strictly prefer to sell for any  $p - b > v$  and will strictly prefer not to sell for any  $p - b < v$ . Hence, the problem of the Acquirer in the first stage is to solve

$$P^* \equiv \operatorname{argmax}_{p \geq v_{\min} + b} \int_{v_{\min}}^{p-b} (v + s - p) f(v) dv.$$

*Proposition 2.* In any subgame perfect Nash equilibrium of the poison pill and effective staggered board game, the Acquirer offers  $p^* \in P^*$  and the Insiders accept if  $p^* > v + b$  and reject if  $p^* < v + b$ .

*Proposition 3.* If  $s > b$ , then every  $p^* \in P^*$  is interior to  $[v_{\min} + b, \infty)$ , and the set of optimal offers are solutions to

$$(s - b)f(p^* - b) - F(p^* - b) = 0.$$

If furthermore  $f$  is a weakly decreasing function on its domain, then there is a unique solution to the above equation and a generically unique subgame perfect Nash equilibrium.

The proposition follows from the second-order condition of the Acquirer’s problem, that  $(s - b)f'(p - b) - f(p) \leq 0$ , which holds for all  $p$  if  $f$  is a weakly decreasing function. Furthermore, if  $s > b$ , then  $b + v_{\min}$  is clearly nonoptimal, as it provides exactly zero utility in expectation, whereas  $b + v_{\min} + (s/2)$  provides strictly positive utility in expectation. For a uniform distribution, for example, the optimal offer is  $s + v_{\min}$  if  $s \geq b$ . For an exponential distribution with parameter  $\lambda$ , we have that  $f(v) = \lambda e^{-\lambda v}$  on  $[0, \infty]$ , and so the optimal offer by the Acquirer is given by

$$\begin{aligned} (s - b)\lambda e^{-\lambda(p^* - b)} - (1 - e^{-\lambda(p^* - b)}) &= 0 \\ -\lambda(p^* - b) &= \ln(1/(\lambda(s - b) + 1)) \\ p^* &= (1/\lambda)\ln(\lambda(s - b) + 1) + b \end{aligned}$$

if  $s \geq b$ .

Given the first-order condition in the above proposition, it is easy to show two properties of the solution. First, since

$$\frac{\delta^2}{\delta s \delta p} \int_{v_{\min}}^{p-b} (v + s - p) f(v) dv = f(p - b) \geq 0$$

we have by Topkis's theorem the following results.

*Proposition 4.* In the poison pill and effective staggered board game, the set of the Acquirer's optimal offers  $P^*$  is weakly increasing in the Synergy  $s$ .

Further, if  $s < b$ , then the first-order condition is always negative, and so we have the following.

*Proposition 5.* In the poison pill and effective staggered board game, if  $s < b$ , it is optimal for the Acquirer to make an offer that will never be accepted.

Finally, we can take the cross-partial with respect to  $b$  and  $p$  to obtain

$$\frac{\delta^2}{\delta b \delta p} \int_{v_{\min}}^{p-b} (v + s - p) f(v) dv = -(s - b) f'(p - b)$$

which is nonnegative if  $f$  is decreasing and  $s > b$ , and so (again by Topkis's theorem) in this case the optimal offer will be increasing with  $b$ .

*Proposition 6.* In the poison pill and effective staggered board game, if  $f$  is a weakly decreasing function and  $s > b$ , then the unique optimal offer  $p^*$  by the Acquirer is weakly increasing in the private benefits  $b$ .

We also have that, from the perspective of the Shareholders, the optimal value of  $b$  may be nonzero. This is because  $b$  has two effects. First, for a fixed price offering, a larger  $b$  increases the range of Target values for which the Insiders choose to not sell the Target even though the Shareholders would wish for them to do so. However, as shown above, a larger  $b$  may also cause the Acquirer to offer a higher price.

Consider the case when  $f(v) = e^{-v}$  on  $[0, \infty]$ . Then, from the calculations above, the Acquirer's optimal offer is given by  $p^* = \ln(1 + s - b)$

+  $b$ . Hence, for a given Synergy  $s$ , the payoff to the Shareholders is given by

$$\int_0^{\ln(1+s-b)} p^* f(v)dv + \int_{\ln(1+s-b)}^{\infty} v f(v)dv$$

$$= \ln(1 + s - b) + \frac{1+b(s-b)}{1+s-b}.$$

At  $b = 0$ , the derivative of this expression is positive with respect to  $b$ , which shows that, from the perspective of the Shareholders, the optimal private benefits are higher than zero. Indeed, one can solve for the optimal benefits from the perspective of the Shareholders, and obtain

$$b^* = \frac{1 + 2s - \sqrt{1 + 4s}}{2} > 0.$$

### 3. The Poison Pill Without an Effective Staggered Board Model

In this model, the game proceeds as follows:

1. The Acquirer makes an offer  $p$ .
2. The Insiders choose to accept or reject.
3. If the Insiders reject, the Shareholders choose whether or not to overrule the Insiders and accept the offer.
4. Payoffs are realized.

Let us first consider the subgame after the Acquirer has offered  $p$ . Note that, for the Insiders, it is a weakly dominant strategy to accept any offer  $p > v + b$  and reject any offer  $p < v + b$ . If the Insiders employ such a strategy, then it is strictly optimal for the Shareholders to reject whenever the Insiders reject and  $\tilde{v}(p) > p$ , where  $\tilde{v}(p)$  is the expected value of the Target, conditional upon the Insiders playing a weakly dominant strategy and rejecting the Acquirer's offer of  $p$ , given by

$$\tilde{v}(p) \equiv \frac{\int_{p-b}^{v_{\max}} v f(v)dv}{\int_{p-b}^{v_{\max}} f(v)dv} = \frac{\int_{p-b}^{v_{\max}} v f(v)dv}{1 - F(p - b)}.$$

Thus, if  $\tilde{v}(p) > p$ , the generically unique weakly undominated Nash equilibrium of the subgame is for the Insiders to reject the offer if  $p <$

$v + b$ , and to accept it otherwise, and for the Shareholders to support their decision.

Consider  $\hat{p}$  defined by

$$\hat{p} \equiv \min \{p \in [0, \infty): \tilde{v}(p) \leq p\}.$$

At this price, even if the Insiders suggest rejection, the expected value of the Target is weakly less than the offered price. Hence, in any weakly undominated subgame perfect Nash equilibrium, the Shareholders will overrule the Insiders and accept the offer.

The existence of a price  $\hat{p}$  at which the Shareholders will always accept the offer means that the Acquirer can now offer the price  $\hat{p}$  and obtain the Target with certainty. Hence, the Acquirer will either offer a price  $p^* \in P^*$  and obtain the Target only if the Insiders agree, or the price  $\hat{p}$  and obtain the Target for sure.

*Proposition 7.* In any weakly undominated subgame perfect Nash equilibrium of the poison pill with no effective staggered board game, the Acquirer either

- offers the price  $\hat{p}$ , which is then accepted by the Shareholders if rejected by the Insiders, or
- offers  $p^* \in P^*$ , which the Insiders accept if  $p^* > v + b$  and reject if  $p^* < v + b$ , with the Shareholders supporting the decision of the Insiders. In this case,  $p^* < \hat{p}$ .

We will call the Acquirer strategy elucidated in the first bullet point the Shareholder-Oriented strategy and the Acquirer strategy elucidated in the second bullet point the Insider-Oriented strategy.

It follows from this proposition that an increase in Synergy can only increase the price  $p$  that the Acquirer offers for the Target. Clearly, as Synergy increases, if the Shareholders and the Insiders continue to use the same strategies, the price offered by the Acquirer will either stay the same or increase (as in Proposition 3). Since  $p^* < \hat{p}$ , if the Acquirer switches from the Insider-Oriented strategy to the Shareholder-Oriented strategy, the price will also increase. Finally, it is clear that the Acquirer will never switch from the Shareholder-Oriented strategy to the Insider-Oriented strategy as  $s$  increases. This is because the value the Acquirer obtains from employing the Shareholder-Oriented strategy increases one-to-one with the Synergy, but only increases at the rate  $F(p^* - b)$  with respect to the Insider-Oriented strat-

egy. To see this, note that the Insider-Oriented strategy gives the Acquirer expected value equal to

$$\int_{v_{\min}}^{p^*(s)-b} (v + s - p^*(s)) f(v)dv$$

and so, by the envelope theorem, the derivative of this with respect to  $s$  is simply

$$\int_{v_{\min}}^{p^*(s)-b} f(v)dv = F(p^*(s) - b) \leq 1.$$

*Proposition 8.* The set of optimal offers by the Acquirer is weakly increasing in the Synergy  $s$ . In particular, if the Acquirer chooses the Shareholder-Oriented strategy for a Synergy level  $s$ , it will also choose the Shareholder-Oriented strategy for any Synergy greater than  $s$ .

### B. *Optimal Level of Takeover Defenses*

Shareholder preferences for defense levels depend on parameters. For instance, consider the case where the value of the Target is uniformly distributed between 250 and 750, and the Private Benefits are 100. If the Synergy is 300, then the Shareholders prefer not to have an effective staggered board, as they obtain an expected utility of 650 without an effective staggered board and 580 with an effective staggered board, while if the Synergy is 500, then the Shareholders still obtain an expected utility of 650 without the effective staggered board (as the Acquirer still always buys the Target) but now obtain 740 with the effective staggered board.

However, we can easily characterize some of the instances in which the Shareholders prefer an effective staggered board. In particular, when  $s$  is sufficiently large, the enhanced bargaining power of the effective staggered board is helpful for the Shareholders.

*Proposition 9.* There exists an  $\bar{s}$  such that for all  $s > \bar{s}$ , the Shareholders prefer to have an effective staggered board.

The logic of the proposition is straightforward. Suppose that the Shareholders do prefer an effective staggered board for a given  $s$ , and consider a given  $\bar{s} > s$ . Then, since the Shareholders strictly prefer the effective staggered board for the Synergy  $s$ , the Acquirer would choose the Shareholder-Oriented strategy if the Target did not have an effec-

tive staggered board, and hence would also do so for Synergy  $s$ . Then, by Proposition 4, we know that if the Target has an effective staggered board, the Acquirer will make a strictly larger offer when the Synergy is  $\hat{s}$  than when it is  $s$ . Therefore, we just need to show that the Shareholders prefer larger offers in the poison pill with an effective staggered board game.

The proof is very similar to the intuition. Let the price that the Acquirer offers for Synergy  $\hat{s}$  be denoted  $\hat{p}$ . If the true value of the Target is such that the Insiders will not sell even at  $\hat{p}$ , the increased Synergy has no effect on the Shareholders' utility. If the true value of the Target is such that the Insiders would sell for either  $p$  or  $\hat{p}$ , then the Shareholders are better off as they receive a higher price. Finally, consider the interval of true Target values for which the Insiders will not sell at the price  $p$ , but will sell at price  $\hat{p}$ . For these Target values, for Synergy  $s$  the Shareholders receive only  $v$ , while for  $\hat{s}$ , they receive  $\hat{p} > v + b$ , and so the Shareholders are better off in this final scenario as well.

More generally, we can calculate the optimal choice of defenses from the perspective of the Shareholders. If parameter values are such that the Acquirer will choose the Insider-Oriented strategy when there is no effective staggered board, then the existence of an effective staggered board has no effect on Shareholders' utility. However, if the Acquirer will choose the Shareholder-oriented strategy when there is no effective staggered board, then there is a difference in welfare for the Shareholders between the two regimes. In that case, the Shareholders prefer an effective staggered board if and only if

$$p^*F(p^* - b) + \int_{p^*-b}^{v_{\max}} v f(v)dv > \hat{p}.$$

Where  $p^*$  is the offer made by the Acquirer when there is an effective staggered board. Furthermore, it is clear that if the Shareholders prefer an effective staggered board, then the Insiders do as well, as the Insiders prefer an effective staggered board if and only if

$$(p^* - b)F(p^* - b) + \int_{p^*-b}^{v_{\max}} v f(v)dv > \hat{p} - b$$

and so we have the following result:

*Proposition 10.* If the Shareholders prefer an effective staggered board, then the Insiders prefer an effective staggered board.



However, it is not the case that the Insiders always prefer an effective staggered board, as shown in an example in the text in subsection II.E.1.