

Concentrating on Governance

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First Draft: May 2005

This Draft: February 2008

¹For helpful comments and suggestions, we thank our discussant Avri Ravid (AFA), as well as Atila Abdilkadiroglu, Heitor Almeida, Yakov Amihud, Kyle Bagwell, Lucian Bebchuk, Dirk Bergemann, Patrick Bolton, Anna Bordon, James Brickley, Janet Currie, Steve Drucker, Richard Ericson, Antonio Falato, Stuart Gillan, Maria Guadalupe, Laurie Hodrick, Wei Jiang, Kose John, Steve Kaplan, Pete Kyle, Vojislav Maksimovic, Daniel Paravisini, Francisco Perez-Gonzalez, Gordon Phillips, Nagpurnanand Prabhala, Michael Riordan, Bernard Salanie, Tano Santos, Till von Wachter, David Weinstein, Daniel Wolfenzon, Jerold Zimmerman, and seminar participants at Columbia University, INSEAD, London Business School, London School of Economics, McGill University, NYU, University of Maryland, University of Michigan, University of North Carolina, University of Notre Dame, University of Rochester, the 2007 AFA meetings in Chicago, and 2006 Batten Conference at William and Mary. Special thanks to Martijn Cremers and Vinay Nair for kindly providing us with data on institutional shareholdings. An earlier draft of this paper was circulated under the title “Does Governance Pay, or Is Entrenchment the Way? Merger Gains and Antitakeover Provisions.” All remaining errors are ours. Corresponding author: Dalida Kadyrzhanova, Department of Finance, Robert H. Smith School of Business, University of Maryland, College Park, MD 20742. Phone: (301) 4053750. Email: dkadyrz@rhsmith.umd.edu.

Abstract

This paper examines a novel aspect of the governance-value relationship. We show theoretically that the valuation effect of antitakeover provisions varies with the degree of industry concentration. We test the unique cross-sectional predictions of our theory: (1) antitakeover provisions should lead to higher takeover premiums, but only in concentrated industries; and (2) antitakeover provisions should be associated with higher shareholder value, but only in concentrated industries. In a large sample of manufacturing firms over the 1990 to 2005 period, we find robust evidence consistent with these predictions. Our evidence suggests that industry concentration is an important mediating factor in the governance-value relationship. Taking cross-industry effects into account significantly strengthens the existing results on the importance of corporate governance.

1 Introduction

The central question in corporate governance is whether and how governance mechanisms create shareholder value. In order to better understand this question, we examine a fundamental and previously overlooked aspect of the governance-value relationship: whether and how it varies across industries – i.e., can governance mechanisms systematically create value in some industries, but destroy value in others?

Starting with the seminal contributions of Gompers, Ishii, and Metrick (GIM, 2003) and Bebchuk, Cohen, and Ferrell (BCF, 2004), recent empirical research focuses on one important governance mechanism, the market for corporate control. GIM and BCF¹ present evidence of a negative relation between takeover defenses and firm value. This evidence is consistent with the classical agency view (Manne (1965), Scharfstein (1988)) that takeover defenses destroy value by reducing the probability of a successful takeover, which “entrenches” management from the discipline of the market for corporate control.

Direct evidence from the takeover market is still relatively limited. Bebchuk, Coates, and Subramanian (2002) find that takeover defenses lower takeover likelihood, consistent with the entrenchment effect. On the other hand, Comment and Schwert (1995) and Schwert (2000) find a weak positive relation between poison pill provisions and target premiums,² consistent with the bargaining view (Stulz (1988)) that takeover defenses create value by allowing target management to fend off opportunistic offers. Thus, direct evidence on the relation between takeover defenses and firm value remains mixed.

Empirical research in this literature estimates an average effect of takeover defenses on firm value that is homogeneous across all types of industries. This approach overlooks the possibility that corporate governance statutes affect firms in different industries in a different manner. We fill the gap in the literature and argue that antitakeover provisions can systematically destroy value in some industries but create value in others. We find robust evidence consistent with our cross-industry heterogeneity hypothesis. Taking cross-industry effects into account significantly strengthens the existing results on the importance of corporate governance.

¹See also Bebchuk and Cohen (2005), Cremers and Nair (2005), and Masulis, Wang and Xie (2007).

²There is also an earlier empirical literature on the shareholder wealth effects of poison pill provisions (DeAngelo and Rice (1983), Linn and McConnell (1983), and Ryngaert (1988). Bhagat and Romano (2002) is a survey).

Our study focuses directly on the market for corporate control. We use theory to guide our empirical analysis and build a model of takeover defenses that is an extension of Fishman (1988) and Berkovitch and Khanna (1990). In our model, antitakeover provisions entrench managers and also function as a bargaining tool vis-à-vis potential acquirers. Our research setting allows us to study whether there is heterogeneity across industries both in the link between takeover defenses and target premiums - i.e., the “bargaining effect,” and in the link between takeover defenses and takeover likelihood - i.e., the “entrenchment effect”. Thus, by looking directly at the takeover market we can address both the “dark” and the “bright” sides of takeover defenses identified in the literature.

We use our model to develop several unique cross-sectional predictions. Our main prediction is that the valuation effect of antitakeover provisions varies depending on the level of concentration in the industry. As standard in models of competitive takeover bidding (e.g., Fishman (1988)), the bargaining effect of antitakeover provisions on target premiums depends on the size of the stakes for potential acquirers. We argue that, for any given bidder-specific characteristics, the stakes are higher whenever mergers have a larger impact on non-merging rivals.³ We show that in such a setting, the impact of mergers on non-merging rivals is larger in concentrated industries. Thus, the effect of antitakeover provisions on target premiums is stronger in concentrated industries. This simple intuition fits actual takeovers (e.g. Conrail contest between CSX and Norfolk Southern in Esty (1998)) and the data.

In a sample of 888 acquisitions in the 1990 to 2005 period, we document strong, robust empirical support for the idea that concentration is an important mediating factor on the impact of antitakeover statutes. In particular, acquisition announcements of targets with more antitakeover provisions in place generate higher abnormal target returns than those of targets with fewer antitakeover provisions *if and only if* targets are in concentrated industries. In contrast, we do not find a statistically significant relation between antitakeover provisions and target premiums for targets in unconcentrated industries. These results hold for a variety of industry classifications and concentration measures and are robust to

³There is a vast theoretical literature in industrial organization and a sizable empirical literature in financial economics supporting the notion that rivals’ profits change as a result of a merger in the industry (see Kaplan (2005) for a recent survey).

controlling for an array of firm and deal characteristics.

Quantitatively the valuation effect of antitakeover provisions in concentrated industries is large: holding all else equal, moving a target with antitakeover provisions from the bottom to the top quartile of industry concentration increases premiums by about 16 percent, which is roughly half the sample mean premium of 34 percent! The size of this effect is noteworthy, especially considering that previous research (e.g., Comment and Schwert (1995)) finds at best a small (about 3 percent) and marginally significant effect of ATPs on premiums. We find that antitakeover provisions have a substantial effect on premiums in concentrated industries. Thus, the governance-value relationship displays wide systematic heterogeneity across industries.

We also document that the link between takeover defenses and the method of payment, an extensively studied takeover characteristic, varies across industries. We find that antitakeover provisions lead to greater likelihood of receiving an all-cash offer, but only in concentrated industries. However, the effect of antitakeover provisions on takeover likelihood does not vary across industries. Consistent with Bebchuk, Coates, and Subramanian (2002) and Bates, Becher, and Lemmon (2007), we find that antitakeover provisions have an entrenchment effect, in that firms with antitakeover provisions are less likely to receive a takeover offer. However, the effect of antitakeover provisions on neither the likelihood of receiving an offer nor the likelihood of takeover success varies across industries. These findings suggest that cross-industry variation in the valuation effect of antitakeover provisions is not likely to be driven by the market attaching different takeover probability to targets in different industries. Overall, the evidence points to important cross-industry heterogeneity in the bargaining effect of antitakeover provisions, but not in the entrenchment effect.

In our last set of results, we examine the implications of our direct evidence from the takeover market for broad unconditional measures of shareholder value such as Tobin's Q. We run the classical governance-performance regressions of GIM and BCF, but allow for systematic heterogeneity across industries. In a large panel of firms from the Investor Responsibility Research Center (IRRC) database between 1990 and 2005, we document a statistically and economically significant positive association between antitakeover

provisions and Tobin's Q in concentrated industries. In contrast, we find that antitakeover provisions destroy value only in unconcentrated industries. The negative effect of antitakeover provisions on value is much stronger than that documented by GIM and BCF. Thus, by allowing the governance-performance relationship to vary across industries, we are able to document, to the best of our knowledge for the first time, large valuation effects of corporate governance.

Finally, we verify that our valuation results are robust to endogeneity concerns by using an instrumental variable approach. We use industry concentration at IPO, which is arguably predetermined with respect to the time of adoption of antitakeover provisions, as an instrument for antitakeover provisions and re-estimate the valuation effect of antitakeover provisions within a two-stage least squares framework. Our results indicate that the link between industry structure and the valuation effect of antitakeover provisions is not spurious. Moreover, while there can be other possible channels leading to our documented heterogeneity in the governance-performance relationship, the main alternative stories such as self-dealing (Hartzell, Ofek, and Yermack (2004)) or the governance role of product market competition (Hart (1983)) are hard to square with the evidence.

In summary, our study makes two main contributions to the literature. First, we develop a new direct test of the effect of antitakeover provisions on firm value. One advantage of looking at the market of corporate control is that takeover premiums offer a direct measure of value creation that is not subject to the critiques levied on long-run event studies. Our approach complements recent work by Masulis, Wang, and Xie (2007), who also study the market for corporate control, but focus on acquirers rather than targets. Our evidence suggests that the governance role of the market for corporate control is a double-edged sword. Specifically, while repealing antitakeover provisions enhances the disciplinary role of takeovers, it comes at the price of losing bargaining power vis-a-vis acquirers particularly in concentrated industries.

By emphasizing that offsetting effects are at work across industries, our study provides a novel perspective over the finding of GIM, BCF, and Schwert (2000) that firm valuation and antitakeover provisions

are weakly linked.⁴ In fact, the focus of previous studies on estimating the average effect of governance on performance across a large variety of industries may have contributed to the mixed results. By allowing the valuation effect of antitakeover provisions to vary across industries, we obtain much sharper estimates of their costs and benefits for shareholders. Overall, our evidence of heterogeneity in the governance-performance relationship supports the idea that there are trade-offs in corporate governance (Fisman, Khurana and Rhodes-Kropf (2005) also find support for this idea). At a methodological level, the evidence suggests that empirical studies of the importance of corporate governance should allow for cross-industry heterogeneity since a failure to do so may lead to significantly understate the consequences of governance for firm value.

Our second contribution is to the extensive work on mergers and acquisitions. At the theory level, our study enriches the literature on auction models of takeovers (Fishman (1988, 1989), McCardle and Viswanathan (1994), Giammarino and Heinkel (1999), Berkovitch and Khanna (1990), and Rhodes-Kropf and Viswanathan (2004)) by embedding this class of models into an explicit product market equilibrium setting. At the empirical level we contribute to the growing body of research suggesting that industry is an important factor in mergers and acquisitions (see Andrade, Mitchell, Stafford (2001) for a survey). Surprisingly, the empirical literature to date has looked at the effect of industry on merger activity (Mitchell and Mulherin (1996), Andrade and Stafford (2004)) and acquirer returns (Eckbo (1983), Song and Walkling (2000), Fee and Thomas (2004)), but has not considered the possibility of cross-industry heterogeneity in the valuation effect of antitakeover provisions.

Outline The remainder of the paper is organized as follows. Section 2 outlines a simple model of antitakeover provisions and derives the main prediction of our product market channel – i.e., industry concentration matters for the effect of antitakeover provisions on shareholder value. Section 3 introduces data and describes the construction of our variables. Section 4 provides strong evidence supporting our

⁴Other studies of the governance-performance linkage are Core, Guay, and Rusticus (2004), Bebchuk and Cohen (2005) and Cremers and Nair (2005). Bertrand and Mullainathan (2003) and Fahlenbrach (2004) study the effect of ATPs on executive compensation. Garvey and Hanka (1999) study the effect of ATPs on firm leverage.

cross-industry heterogeneity hypothesis. Section 5 addresses robustness and explores further implications of our model. Section 6 concludes.

2 A Model of Antitakeover Provisions

Consider three firms in an industry of n firms that are rivals in the product market: a target and two potential acquirers indexed by $i = 1, 2$. Firms are all-equity with risk-neutral shareholders and managers. The target can adopt antitakeover provisions (ATPs) prior to receiving a takeover offer. Successful completion of takeover by either bidder has an impact on the subsequent competition in the product market. This simple model will illustrate the idea that the structure of product markets matters for the decision to adopt ATPs.

There are three periods. In $t = 0$, the target determines whether to adopt ATPs.⁵ We denote this choice by $\alpha \in \{0, 1\}$, where $\alpha = 1$ if ATPs are adopted and $\alpha = 0$ otherwise. ATPs involve a cost, C , for target shareholders, which reflects the agency cost of entrenched management. However, they enable target management to reject positive premium takeover offers, i.e. strictly higher than the target's stand alone value, π .⁶ This makes successful completion of the takeover costly for a potential acquirer. We denote by c the extra cost a potential bidder bears when facing a target with ATPs who treats their offer as hostile.⁷ The target adopts ATPs based on maximization of shareholder wealth, i.e. based on the expected payoff or premium in the event of a takeover in the next period.

In $t = 1$, the takeover process unfolds. In the beginning of the period, bidder 1 learns about the possibility of generating a synergy, s_1 , by acquiring the target. When bidder 1 learns about the synergy, he decides whether to make a takeover offer to the target. There is potential bidding competition as, at the end of the period, bidder 2 learns about a potential synergy, s_2 , with the target. When bidder 2

⁵Any firm could adopt ATPs but this decision is only interesting in relation to a potential takeover so we focus on the decision of the firm who is eventually a target.

⁶For example, a staggered board is a charter provision that mandates that only a given proportion - typically 1/3 - of the board can be elected each year so that it takes 3 years to turn over the board completely. As takeovers require board approval, with a staggered board it could take up to three years to complete the transfer of control.

⁷Technically here we assume that after bidder 1 announces its offer, the target with ATPs decides whether to accept or reject the offer. If the offer is rejected, bidder 1's synergy is reduced by the amount c .

learns about the synergy, she can make a takeover offer. For either firm, making an offer involves a cost, c , which can be thought of as the cost of the due diligence process.⁸ Each bidder's synergy is private information and can be either high or low, i.e. $s_i \in \{H, L\}$, $i = 1, 2$, with probabilities q and $(1 - q)$, respectively. The probabilities are common knowledge.⁹

If bidder 1 does not make an offer at the beginning of the period, he can decide to pay the cost c and make an offer at the end of the period after having observed bidder 2's offer.¹⁰ If both bidders decide to make an offer, a takeover contest ensues, where bidders make repeated offers for the target until one drops out. As is standard, we model this oral ascending auction as a second price auction based on the well-known revenue-equivalence of the two auction formats (see Rhodes-Kropf and Viswanathan (2004)).

There are three potential outcomes from this process: takeover by bidder 1, takeover by bidder 2 or no merger. These outcomes can occur in different ways. If bidder 1 decides to bid at the beginning of the period, his initial offer is either accepted or resisted by the target. In either case, bidder 2 decides whether to make an offer or not. If bidder 2 makes an offer then bidder 1 competes with bidder 2 in an auction or if bidder 2 makes no offer bidder 1 acquires control of the target by paying the last outstanding bid (the initial offer - only if it is above the target's reservation value). Alternatively, if bidder 1 decided not to make an initial offer, then bidder 2 decides on her opening offer. The outcomes in this case are the same as above, with the two bidders reversed. Finally, if bidder 2 does not make an offer, then bidder 1 takes over the target at any price above the target's reservation value. The target makes all accept/reject decisions to maximize target firm value.

In $t = 2$, product market competition takes place, firms collect profits, and the game ends. Production

⁸The assumption that the the entry cost is equal to the cost to bidder 1 of the target's use of ATPs, c , is made for convenience. Our results hold for any entry cost \tilde{c} s.t. $\tilde{c} \leq c$. A higher entry cost will not be effective as bidder 2 would never enter.

⁹Although we discuss the model in terms of "synergies", the set-up of the model does not make any assumptions on the sign of synergies, s_i $i = 1, 2$, and our results (Proposition 3 and Corollary 4) do not depend on the sign of the synergies. Most empirical literature finds evidence consistent with positive synergies (see, for example, Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Andrade, Mitchell and Stafford (2001)). However, mergers could be driven by other motives, such as, for example, managerial self-dealing (Morck, Shleifer, and Vishny (1990), Hartzell, Ofek, and Yermack (2004), Harford (1999)), or overvaluation (Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004)). Our model can accommodate positive, negative, or zero expected synergies.

¹⁰Allowing bidder 1 to wait has the advantage of addressing a common issue that arises with ATPs, deterrence: by making it more expensive to take over the target for bidder 1, naturally ATPs could give rise to an incentive to wait.

market competition is assumed to be differentiated product Bertrand, but the comparative statics from our model will be the same for many standard models such as differentiated product Cournot. If no merger has occurred, each firm earns stand alone profit, π . If a merger occurs, then the profit of the winning bidder, or acquirer, is $\pi_i^A = \pi + s_i$. The profit of the losing bidder, or rival, is $\pi^R = \pi - \lambda$, where $\lambda \neq 0$ denotes the “product market effect” of the merger on the rival.¹¹

The product market effect of mergers, λ , which captures the effect of the merger on the profits of the rivals, is the novel feature of our model. There is a vast theoretical literature in industrial organization and a sizable empirical literature in financial economics supporting the notion that rivals’ profits change as a result of a merger in the industry (see, for example, Kaplan (2005) for a survey of the empirical literature on the product market effect). The product market effect implies that, in our model, bidding firms anticipate that their profits will change if the target is acquired by the rival. This, in turn, matters for their decision whether to make a takeover bid and how much to bid.

While theory and empirical evidence are firm on the existence of the product market effect, the evidence is mixed on the sign of this effect. For example, studies of wealth effects of merger announcements on rivals (Eckbo (1983)) and upstream suppliers and downstream customers (Fee and Thomas (2004)) have suggested that horizontal mergers are driven by a combination of the economic efficiency and information arguments, i.e. $\lambda < 0$. On the other hand, studies of the long-run effect of horizontal mergers on product prices generally find evidence of price increases consistent with greater market power (see, for example, Kim and Singal (1993), Borenstein (1990)), i.e. $\lambda > 0$. We are explicit not to make any assumption on the sign of the product market effect, λ , and our theory does not depend on the sign of λ . All our results throughout the paper hold for a general $\lambda \neq 0$.

We have now outlined the model and key assumptions. In the next subsection we will detail the negotiation process and solve the model using backward induction. In effect, we will contrast the equilibria of two distinct subgames, with and without ATPs. Target ATP adoption decision will pin down the unique

¹¹ λ is not subscripted with an i for simplicity. The model’s predictions are unchanged if we assume that π^R and therefore, λ depend on the synergy of the winner.

subgame-perfect equilibrium that maximizes target expected payoff.

2.1 Product Market Competition

In this subsection we illustrate how, with imperfect product market competition, a merger has an effect on rival firms' profits. Consider n firms competing in a differentiated-product Bertrand oligopoly.¹² Each firm can produce quantity q_i of a differentiated good i at a cost $\kappa_i q_i$. Let $q_i = \left(1 - bp_i + \sum_{j \neq i} p_j\right)$, $|b| > 1$, be the amount firm i sells when it charges price p_i for its good, while facing competitors that charge p_{-i} . Firm i 's profits are given by $\pi_i = \left(1 - bp_i + \sum_{j \neq i} p_j\right) (p_i - \kappa_i)$. We assume that potential acquirers have lower production costs than potential targets, i.e. production costs are such that $\kappa_A < \kappa_T$. The potential synergies arise from a shock that allows acquirers to produce the product of the target at a cost κ_A or a cost $\kappa_A + \epsilon < \kappa_T$. Thus, each merger has the potential to realize either a high or a low synergy.

These assumptions are consistent with the model laid out above and will provide a simple solution for π , π_i^A , and π^R that we will use to solve for the takeover equilibrium and ultimately the decision to adopt takeover provisions. See Appendix A for the derivation of profits for different outcomes.

This simple set up leads almost directly to the following proposition that establishes the link between the size of the product market effect and industry concentration:

Proposition 1 (*Product Market Effect*) *The product market effect, $\lambda = \pi - \pi^R$, of mergers is larger in concentrated industries.*

Proof. *See Appendix A.* ■

To understand the intuition for this result, which is formalized in Appendix A, it helps to think of two polar types of concentrated markets: in the first type, call it the “symmetric industry,” there is a small number of typically large firms, perhaps due to economies of scale or barriers to entry. The product market

¹²The main result of this subsection, that product market effect λ depends on industry concentration, will also hold in a differentiated-product Cournot oligopoly. The proof of Proposition (1) for differentiated-product Cournot oligopoly is available on request from the authors.

effect of a merger is large in this type of industries due to a general property of imperfect competition that, as the number of firms decreases, any single firm's price affects the profits of rivals to a greater extent than if there were many firms (see, for example, Chapter 6 in Vives (2000)). Thus, by enabling the merging firm to charge a different price, mergers have a greater impact on rivals in symmetric industries.

The second type of concentrated industries, call it the "dominant-firm industry," is characterized by a handful of leading firms with large market shares competing with many fringe firms with small market shares, perhaps due to the leading firms having access to a superior technology. In this type of industries, mergers tend to be acquisitions of an underperforming firm by an industry leader who, by applying its superior technology to the acquired firm's production, can magnify its lead over the rivals. Since the product pricing decisions of leaders have a large influence on the demand of any other firm in the industry, mergers have a greater impact on rivals in dominant-firm industries.

2.2 Takeover Process

In this subsection we characterize equilibrium bidding behavior at $t = 1$, given profits in the product market, and we derive the implied expected payoffs to the target and the acquirer. We establish a link between product markets and bidding behavior. In particular, we show that the mere possibility of ending up with bidding competition is sufficient for product markets to affect takeover bids.

We first state and discuss the payoffs and equilibrium definition for the case when bidder 1 decides to enter and make the initial bid. This allows us to focus on the key case of interest in the model and we leave a complete description of payoffs to the Appendix.¹³ Let $(p(s_1), e(s_2))$ denote the initial offer of the first bidder and the entry decision of the second bidder, respectively, where $e(s_2) = 1$ denotes entry and $e(s_2) = 0$ denotes no entry. Also, let $\phi \in \{0, 1\}$ denote the target's decision to resist an offer, where $\phi = 1$ if resist and $\phi = 0$ otherwise. If bidder 1 makes an initial offer $p(s_1)$, his payoff depends on whether

¹³Payoffs in the alternative case when bidder 1 decides not to make the initial bid are symmetric to the payoffs described in the text, i.e. they involve a straightforward change of indices. In fact, in this case the roles of the two bidders are reversed - bidder 2 can make the initial bid and bidder 1 may decide to compete.

bidder 2 enters or not, i.e. $e(s_2) = 1(0)$. The payoffs are given by

$$\begin{aligned}
v_1(s_1, s_2, p(s_1), e(s_2) = 0) &= s_1 - \alpha\phi c - p(s_1) \\
v_1(s_1, s_2, p(s_1), e(s_2) = 1) &= s_1 - \alpha\phi c - \min\{\max(p(s_1), s_2 + \lambda), s_1 - \alpha\phi c + \lambda\} \\
v_2(s_1, s_2, p(s_1), e(s_2) = 0) &= -\lambda \\
v_2(s_1, s_2, p(s_1), e(s_2) = 1) &= s_2 - \min\{s_1 - \alpha\phi c + \lambda, s_2 + \lambda\} - c.
\end{aligned}$$

This characterization of bidder payoffs highlights the role of the product market effect. If a takeover had no consequence in the product market, the equilibrium bidding would be entirely standard with both bidders bidding their types, s_i . However, since bidders anticipate the product market effect of a takeover in $t = 2$, i.e. $\pi^R \neq \pi$, their bidding behavior is affected. In particular, bidders are willing to bid above their synergy as they face a cost from losing the target to their rival. Formally, as shown in Jehiel and Moldovanu (1998), equilibrium bids in this case are $s_i + \lambda \neq s_i, \forall s_i \in \{H, L\}, i = 1, 2$.

We consider pure strategy equilibria. We employ Sequential Equilibrium (SE) and the intuitive criterion of Cho and Kreps (1987) as a refinement of beliefs, which is standard in the literature since Fishman (1988, 1989) and Berkovitch and Khanna (1990)). In particular, in a SE: (i) $p(s_1)$ maximizes bidder 1's expected payoff, given e , bidder 2's entry strategy; (ii) for all initial offers $p(s_1), e(s_2)$ maximizes bidder 2's expected payoff, given bidder 2's updated belief on s_1 ; and (iii) for all $p(s_1), \phi$ maximizes target's expected payoff, given target's updated belief on s_1 ; and (iv) bidder 2 and target's updated belief on s_1 is consistent with $p(s_1)$ and Bayes' rule for initial offers that are made in equilibrium and satisfies the intuitive criterion for initial offers that are made out of equilibrium.

Equilibrium bidding and entry behavior can be characterized as follows

Proposition 2 (ATPs and Bidding).

(a) *In the unique separating equilibrium without ATPs, bidder 1 always makes an initial offer and bids $p(L) = 0$ or $p(H) = q(L + \lambda)$. If Bidder 2 is a low type then Bidder 2 does not compete. If Bidder 2 is a high type then Bidder 2 competes only if Bidder 1's offer is below $q(L + \lambda)$.*

(b) In the unique separating equilibrium with ATPs, bidder 1 always makes an initial offer and bids $p(L) = \max \left\{ L - \frac{c}{1-q} + \lambda, 0 \right\}$ or $p(H) = \max \{ q(H - c + \lambda), L - c + \lambda \}$. The target never resists initial bids, i.e. $\phi(p(s_1)) = 0$ for all $p(s_1)$. If Bidder 2 is a low type then Bidder 2 does not compete. If Bidder 2 is a high type then Bidder 2 competes only if Bidder 1's offer is below $L - \frac{c}{1-q} + \lambda$.

Proof. See Appendix A. ■

There is a unique separating equilibrium.¹⁴ Bidder 1 in making its initial offer takes into account the effect of the offer on the belief of bidder 2 because if bidder 2 believes bidder 1's type is high, then bidder 2 chooses not to compete. As a consequence, without ATPs bidder 1 makes a zero bid when it is low type, as that is the lowest bid necessary to signal its type. On the other hand, the lowest bid necessary for bidder 1 to signal a high type must preclude profitable deviation from a zero bid by the low type. In other words, it must be such that the expected payoff of the low type when it bids zero, $(1 - q)L - q\lambda$, is higher than the expected payoff when it mimics the high type, $L - p(H)$, which gives $p(H) = q(L + \lambda)$. This bid, however, is not an equilibrium with ATPs. In fact, the target in this case finds it profitable to reject this bid as it anticipates that bidder 2 will choose to compete against a high type bidder 1 which has to bear the cost of managerial resistance. Since the expected payoff to the target from rejecting this initial bid is $q(H - c + \lambda)$, this is exactly what a high type bidder 1 has to offer in equilibrium to insure target acceptance.

Using the equilibrium strategies from Proposition (2), we can derive the expected payoff, or premium, to the target, P . In general, this is given by $P = qp(H) + (1 - q)(q(L + \lambda) + (1 - q)p(L))$, as with probability q the target receives an initial offer, $p(H)$, from a high type bidder 1, in which case bidder 2 does not enter irrespective of its own type. Otherwise, with probability $(1 - q)$, the target faces a low type bidder 1, in which case bidder 2 competes and wins only if it is high type, i.e. with probability q . Hence, using the equilibrium bids from Proposition (2), we can state the target's expected payoff, or

¹⁴While this is the only equilibrium with ATPs, in the case when $(1 - q)(H - L) < c$ there is also a pooling equilibrium without ATPs. In this case, it is straightforward to demonstrate that there is never competition without ATPs as bidder 2's expected gain when it is high type, $(1 - q)(H - L)$, is less than the entry cost. Our result in this case is immediate as there is never competition without ATPs while the equilibrium with ATPs is the same as in Proposition 2. As a consequence, we focus on the separating equilibrium.

premium, without and with ATPs, respectively, as follows

$$P^{\alpha=0} = q(L + \lambda)$$

$$P^{\alpha=1} = q \max \{q(H - c + \lambda), L - c + \lambda\} + (1 - q)^2 \max \left\{ L - \frac{c}{1 - q} + \lambda, 0 \right\} + (1 - q)q(L + \lambda)$$

It is straightforward to show that $P^{\alpha=1} > P^{\alpha=0}$, i.e. target revenues in the takeover process are higher with ATPs. Thus, if there were no entrenchment costs, adopting ATPs would strictly add value. However, we must consider both the costs and benefits when examining the question of whether ATPs add value, a task we undertake in the next subsection.

2.3 Anti-takeover Provisions and Shareholder Value

The ex-ante choice of ATPs maximizes target shareholders' expected revenues at $t = 0$. The target's expected payoff without ATPs is $\Pi^{\alpha=0} = P^{\alpha=0}$, while it is $\Pi^{\alpha=1} = P^{\alpha=1} - C$ with ATPs, due to the agency cost of entrenched management. Thus, ATPs are adopted whenever the target expects a value gain in equilibrium, i.e. if $\Delta\Pi \equiv \Pi^{\alpha=1} - \Pi^{\alpha=0} \geq 0$. The following proposition summarizes our main result, which is key to deriving our predictions on the valuation effect of ATPs:

Proposition 3 *There exists a unique λ^* such that for every $\lambda \geq \lambda^*$ it is optimal for targets to adopt ATPs, i.e. there exists λ^* such that for every $\lambda \geq \lambda^*$, $\alpha^* = 1$, and for every $\lambda < \lambda^*$, $\alpha^* = 0$.*

Proof. See Appendix A. ■

The key to this result is the monotonicity of the value gain from adopting ATPs, $\Delta\Pi$, in the product market effect, λ . Intuitively, the benefit from ATPs is that, in the event of a takeover bid, they give target boards the ability to credibly threaten the initial bidder with competition. This threat leads to a higher initial offer whenever bidding competition is expected to be relatively more intense, that is in industries where the product market effect, λ , is larger. Thus, the value of ATPs should be higher in these industries. This monotonicity result has an important comparative statics implication, which constitutes the basis for our empirical predictions:

Corollary 4 (Value of ATPs) *ATPs have greater value in industries where the product market effect, λ , is larger, i.e.*

$$\frac{d\Delta\Pi}{d\lambda} \geq 0$$

and there exists a unique λ^ such that $\frac{d\Delta\Pi}{d\lambda} > 0$ for every $\lambda \geq \lambda^*$.*

Proof. *See Appendix A. ■*

Thus, our theory predicts that there should be a positive interaction of the product market effect, λ , and ATPs on shareholder wealth.

Finally, we bring our theory to a close by linking back to Proposition 1. Proposition 1 showed us that the product market effect, λ is larger in concentrated industries. Proposition 3 and Corollary 4 showed us that ATPs have greater value if the product market effect is larger. Taken together, these results lead to the main conclusion of our theory that ATPs have greater value in concentrated industries.

2.4 Empirical Implications

Our model implies that the wealth effect of ATPs should depend on industry concentration. This result leads to predictions that are readily testable as data on both ATPs and concentration is available. In fact, while we solve for the equilibrium of a given industry, our key result is a comparative statics exercise in the degree of concentration of market structure. It allows us to study the relationship between equilibrium outcomes across industries with different degrees of concentration. As such, the result allows us to make cross-industry empirical predictions.

First, Corollary (4) implies that ATPs increase target premiums in concentrated industries. This is because, in our model, ATPs make it more likely that a second firm joins the bidding process. As shown above, the resulting effect on target premiums is larger in concentrated industries. This suggests a straightforward empirical test, where we will ultimately look at how target premiums depend on the interaction of ATPs and concentration, i.e. the product of ATPs and concentration. Our model's prediction that ATPs have a positive effect on shareholder wealth, but only in concentrated industries, translates

into an empirical prediction of a positive interaction effect of ATPs and concentration on target premiums:

PREDICTION 1: Antitakeover Provisions and Target Premiums. An increase in industry concentration strengthens the positive impact of ATPs on target premiums.

This prediction is an important leg in our theory. However, even if targets with ATPs can extract higher premiums in concentrated industries, target shareholders may not benefit from having ATPs. In fact, if firms with ATPs have a different likelihood of receiving a takeover offer, that is, if ATPs also deter takeovers, then target premiums could be higher due to the surprise associated with a takeover bid for a firm with ATPs in a concentrated industry, rather than, as predicted by our model, the higher price it commands.

In order to rule out this alternative explanation, we observe that Corollary (4) predicts a positive interaction effect of ATPs and concentration on ex-ante firm value, which must include both the probability of receiving a takeover offer as well as the premium expected upon takeover. Thus, if the main effect of ATPs is to lower the likelihood of receiving a takeover offer for firms in concentrated industries, we should expect a positive interaction effect of ATPs and concentration on takeover premiums, but a negative interaction effect on firm value. On the other hand, Corollary (4) implies a positive interaction effect of ATPs and concentration on ex-ante firm value:

PREDICTION 2: Valuation Effect of Antitakeover Provisions. In concentrated industries, ATPs increase firm value.

Finally, the general intuition of our model suggests a final testable prediction about an important takeover characteristic, the method of payment. Our model implies that, in concentrated industries, ATPs encourage bidders to sweeten their initial offers so that to avoid the prospect of bidding competition. To the extent that increasing the cash component of the offer makes it more likely that the target accepts it, there should be a positive relationship between the frequency of all-cash offers and ATPs, but only in concentrated industries. This leads to the following prediction:

PREDICTION 3: Antitakeover Provisions and the Method of Payment in Takeovers. An

increase in industry concentration strengthens the positive impact of ATPs on the likelihood that targets receive all-cash bids.

These three predictions, which follow from Propositions (1) and (3) and Corollary (4), form the basis for our empirical tests. The empirical analysis consists of two steps. The first step is the construction of an empirical measure of concentration. The second step is the analysis of the relation between concentration and the effect of antitakeover provisions on target premiums (Prediction 1), firm value (Prediction 2), and the method of payment in takeovers (Prediction 3).

3 Data Description

This section describes the selection criteria for our acquisition sample and then gives details on data sources and construction for target returns, our main dependent variable, ATP indices and industry concentration, our key explanatory variables, and other firm and deal level controls.

3.1 Sample Construction

Our acquisition sample is taken the Securities Data Corporation's (SDC) U.S. Mergers and Acquisitions database between January 1, 1990 and December 31, 2005. We include both successful and unsuccessful takeover offers¹⁵ for targets in manufacturing industries (SIC 2000-3999) subject to a number of standard selection criteria (e.g. Moeller, Schlingemann, and Stulz (2005), Masulis, Wang, and Xie (2007)): we require that the value of the transaction is at least \$1 million and at least 1% of the market value of the assets of the acquirer¹⁶; the target is a U.S. firm traded on NYSE, AMEX, or NASDAQ and the acquirer controls less than 50% of the shares of the target prior to the acquisition announcement and obtains 100% of the target shares as a result of the transaction; the necessary data on target characteristics is available from Compustat and CRSP. We manually collect data on staggered board and poison pill provisions of

¹⁵We do so to avoid an ex-post bias that can arise if the likelihood of completion of announced takeovers varies systematically with industry concentration.

¹⁶The market value of the assets of the acquirer is measured as market capitalization on the 11th trading day prior to the announcement date. Results are reported for the 1% threshold but hold for more restrictive 5% and 10% thresholds.

target firms in our dataset from proxy statements in the year preceding takeover announcement. This leaves us with a sample of 888 takeover deals for which we have data on ATPs and takeover premiums. 764 of these deals are successful and 124 are unsuccessful. Panel A of Table 1 provides information on the characteristics of takeover deals over our sample period.

Our choice of considering only manufacturing industries is standard for the finance literature that uses industry concentration (see, for example, Aggarwal and Samwick (1999) and MacKay and Phillips (2005)). This is due to the fact that the literature uses concentration data reported by the Census of Manufacturers, which is only available for manufacturing industries. The Census Bureau data help minimize selection bias and classification error associated with using concentration measures calculated from Compustat.

Finally, in our tests of Prediction 2 we run the classical governance-performance regressions of GIM and BCF, allowing for systematic heterogeneity across industries. To this end, we combine the IRRC database, which includes detailed information on ATPs at approximately 1,500 firms for 1990, 1993, 1995, 1998, 2000, 2002, and 2005, with data on industry concentration and firm characteristics, such as Tobin's Q, size and age. Following GIM, we assume that during the years between two consecutive publications, firms have the same governance provisions as in the previous publication year.¹⁷ Panel B of Table 1 summarizes the IRRC sample of 896 firms in manufacturing industries (SIC 2000-3999) that we use.

3.2 Variable Construction

3.2.1 Target Returns

We employ a standard event study methodology to capture the link between ATPs and target announcement returns. We follow Schwert (2000), and report results for an event window $(-63,126)$ surrounding the announcement of the bid, where event day 0 is the announcement date of the initial takeover bid

¹⁷We obtain very similar results (unreported, but available upon request) if we assume that firms have the same governance provisions as in the next publication year or if we restrict our sample to the seven years with IRRC data.

as reported in SDC’s Mergers and Acquisitions database. We calculate the cumulative abnormal stock return (CAR) for the target over this window using the market model. We use the CRSP equally-weighted return as the market return and estimate the market model parameters over the period from event day -253 to event day -64. As in Schwert (2000), target premiums in our sample are the sum of a runup component, measured as the market-adjusted return to the target’s stock in the three months before the first bid (trading days (-63, -1) relative to the first bid), and a markup component, measured as the market-adjusted return to the target’s stock in the six months after the first bid (trading days (0, 126) relative to the first bid).

3.2.2 ATP Indices

To study the effect of ATPs on target premiums, we manually collect data on staggered board and poison pill provisions of target firms in our dataset from proxy statements in the year preceding takeover announcement. We experiment with a variety of indices. Our main measure of ATPs is a governance index based on the sum of the staggered board and poison pill provisions (SB&P) that ranges from 0 to 2. Bebchuk, Coates and Subramanian (2002) argue that, as well recognized by M&A practitioners (Lipton (2002), Gordon (2002)), staggered (classified) boards constitute the most significant barrier to hostile acquisitions, especially when combined with a poison pill. In fact, the combination of classified board and poison pill can impose up to a two-year delay on an acquirer. Thus, SB&P is a parsimonious index, which includes, arguably, the most effective ATPs. For robustness, we also replicate our results using only SB, an indicator variable for whether the target firm has a staggered board provision.

For our tests of Prediction 2, in which we run the classical governance-performance regressions of GIM and BCF allowing for systematic heterogeneity across industries, we construct the SB&P and the SB indices from the IRRC dataset. To verify comparability of our results to previous studies, we also use the G-index constructed by GIM and the E-index constructed by BCF. The G-index is the sum of all antitakeover provisions in a firm’s charter¹⁸ and varies between 0 and 24, with higher values of the index

¹⁸A detailed description of takeover defenses included in the G-index can be found in GIM, Appendix A.

corresponding to more ATPs. BCF argue that not all of the 24 provisions in the GIM index are effective antitakeover measures and construct the E-index, which uses only six provisions: staggered boards, limits to shareholder bylaw amendments, limits to shareholder charter amendments, supermajority requirements for mergers, poison pills, and golden parachutes. BCF show that the E-index has a stronger association with stock returns and firm value than the G-index. Consistent with previous studies (e.g., BCF and GIM), the sample average E-index is 2.36 and the sample average G index is 9.39. The G and E indices have a positive 76% correlation.

3.2.3 Industry Concentration

Our main measure of industry concentration draws from the Bureau of Census four-firm domestic concentration ratios¹⁹, which are reported quinquennially (e.g., 1992, 1997, and 2002). We use concentration ratios from most current census year as well as concentration ratios at the time of the firm's IPO. We use four-digit SIC classifications to define industry membership.²⁰

To check for robustness of our results, we collect data on alternative measures of concentration. In particular, we also consider 1) the Herfindahl-Hirschman Index (HHI) reported by the Census Bureau; 2) number of competitors in the industry reported by the Census Bureau; and 3) import penetration, a widely measure of foreign competitive pressure.

Import penetration is defined at 4 digit SIC industry level as the ratio of imports over imports plus domestic production in that year. The imports information is obtained from the NBER International Trade database ("US Imports, Exports and Tariff Data, 1989-2001"). The information on domestic production is from Census Bureau's Annual Survey of Manufactures provided by the Bureau of Economic Analysis (see Bertrand (2004) and Guadalupe and Perez-Gonzalez (2006) for other studies that use this measure).

¹⁹*CR4* is the ratio of the sales of the top four firms in an industry to total industry sales.

²⁰Although all of the results in the paper are presented with four-digit SIC classifications, in unreported tables we replicate our findings at the three-digit SIC level.

3.2.4 Other Determinants of Target Returns

Target Characteristics To control for target firm characteristics which are typically included in previous studies of target shareholder wealth effects (Schwert (1996, 2000)), we supplement target announcement returns data with various items from the Compustat and CRSP databases. We measure return on equity (ROE) as the ratio of earnings to average equity for the current and prior fiscal year (item 20/(item 60+ item 60_{t-1})). Sales Growth is the growth in sales (item 12) over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets (item 4-item 5) to total assets (item 6). D/E is the long-term debt (item 9) to book equity (item 60). M/B is the ratio of market to book value of stockholders equity (items 24·25/(item60+item74)). P/E is the ratio of stock price (item 24) to the earnings for the last fiscal year (item 58). Finally, size is the log of the market value of common stock, measured at the end of the fiscal year before the first bid.

Deal Characteristics In addition to ATPs, our takeover dataset includes a host of other deal characteristics which are typically included in previous studies of target shareholder wealth effects (Schwert (1996, 2000)). These deal characteristics include whether the target was successfully taken over without more than a one year interval between bids, whether other formal bids are made for this target firm, whether the payment to target shareholders is all in the form of cash, or in the form of equity, and whether the deal is a tender offer. Following Schwert (2000), we also include a measure of hostility reported by the SDC.

Tables 1 and 2 provide summary statistics of the key variables in our data. Table 1 reports mean and median values and standard deviations, while Table 2 reports pair-wise correlations. The top panel of each table pertains to the 888 deals in the takeover sample. The bottom panel pertains to the 8969 observations in the IRRC sample. Mean concentration in the IRRC and takeover samples is comparable, 42% and 39%, respectively. Further, in both samples majority of firms use ATPs: SB&P averages about 1.21 in the IRRC sample, and 1.26 in the takeover data sample. Finally, consistent with previous studies of target premiums (e.g. Schwert (2000)), targets have somewhat lower size (7.12 in the panel data sample

vs 6.89 in the takeover sample) and profitability (0.14 vs 0.11, respectively), which is to be expected given that smaller and relatively underperforming firms are more likely to become a target.

Before presenting the results of our formal tests, we offer some univariate evidence of cross-industry heterogeneity in the valuation effect of ATPs. In Table 3, we provide a first glimpse at how ATPs and industry concentration affect target shareholder wealth effect of acquisitions, the central mechanism of our model. We report the difference in average takeover premium to having ATPs between concentrated and unconcentrated industries: the unconcentrated subsample contains firms in industries in the lower quartile of the sample distribution of concentration, while the concentrated subsample contains firms in industries in the upper quartile of the sample distribution of concentration.²¹ In the full sample, there is no statistically significant difference in takeover premiums between democracy and dictatorship firms. This is also true within unconcentrated industries. However, in concentrated industries targets with ATPs command substantially larger premiums compared to targets with no ATPs: average takeover premium is only 26.4% in targets with no ATPs, but is as high as 40.6% in concentrated industries. The difference, 14% or close to half of the sample average takeover premium, is significant both statistically and economically.²² Thus, the univariate evidence is broadly consistent with our product market channel. However, to formally test the predictions of the model, we need to control for firm and deal characteristics in order to rule out the possibility that our results are driven by the correlation between ATPs and these characteristics.

4 Empirical Results

We divide our empirical analysis in two parts. First, we present direct evidence from the market for corporate control (Predictions 1 and 3). Second, we test the implications of our model for broad unconditional measures of shareholder value such as Tobin's Q (Prediction 2). Our tests document wide heterogeneity in

²¹We calculate industry concentration quartiles at the firm level. In unreported results available upon request, we verify that our results are robust to computing concentration quartiles at the industry level.

²²Our findings are qualitatively robust to using sample mean and median concentration as well as various other thresholds (e.g., lowest vs highest concentration tercile) to divide the sample in unconcentrated/concentrated subsamples.

the relation between ATPs and firm value across industries. By linking ATPs to industry concentration, we obtain sharp estimates of the effect of governance on shareholder value.

4.1 Test 1: Antitakeover Provisions and Target Premiums

Prediction 1 states that the industry concentration strengthens the positive effect of ATPs on target premiums. To test this prediction, we use the following specification:

$$CAR_i = b_0 + b_1 * ATP_i + b_2 * Concentration_i + b_3 * ATP_i * Concentration_i + b_4 * X_i + e_i \quad (1)$$

where CAR_i is the cumulative abnormal return to the target firm's stock for trading days (-63, 126) relative to the date of the first bid (following Schwert (2000)). ATP_i is the target's level takeover protection, and $Concentration$ is our measure of concentration. We include standard firm controls such as the target's ROE, sales growth, liquidity, debt-equity ratio, market to book, price earnings ratio, and size. We also add year effects to control for time trends in the average market reaction to acquisitions and Fama-French (1997) 48-industry fixed effects to control for clustering of acquisition activity at the industry level. Our variable of interest is the interaction of ATPs and industry concentration ($ATP_i * Concentration_i$). The null hypothesis is that the coefficient on this interaction variable, b_3 , equals zero.

We estimate both a baseline specification and richer specifications that include hostility, and three other deal characteristics: auction, cash, and tender, i.e., respectively, whether another bidder enters the competition for the target firm, whether the payment to target shareholders is all in the form of cash, and whether the deal is a tender offer. Unlike performance variables and ATPs, these deal characteristics are generally not known before the first bid is announced, and some are not known until the outcome of the deal has been determined.

Table 4 reports our results from estimating Equation (1). Consistent with Prediction 1, the interaction effect of ATPs and concentration is positive and statistically significant (Column (1)). This result is robust to including other deal characteristics, such as hostility, method of payment, and dummies for auction and

tender offer (Column (3)). The estimated coefficient on the interaction term (0.331) implies that ATPs increase premiums by about 0.33 percent for each percentage point increase in concentration. Thus, the evidence strongly supports our argument that industry concentration is an important determinant of target shareholder wealth effects of ATPs.

Quantitatively the magnitude of our product market effect is strikingly large: holding all else equal, moving a target with ATPs from an unconcentrated to a concentrated industry, i.e. from the bottom to the top quartile of industry concentration, increases premiums by about 16 percent, which is roughly half the sample mean premium of 34 percent. To help put this number into context, consider that previous research typically finds mixed evidence of an effect of ATPs on premiums, and when it finds a positive effect (e.g., Comment and Schwert (1995)), this effect is small, about 3 percent, and only marginally significant.

Columns (2) and (4) of Table 4 verify that these results are not driven by the inclusion of the poison pill in our measure of ATPs. A potential concern is that a poison pill is hardly a commitment device as it can be easily adopted and repealed by management, without shareholder approval. Since our model emphasizes the precommitment value of ATPs, it is comforting to confirm that our results continue to hold when we measure ATPs solely by whether or not the target has a staggered board - a charter provision that cannot be easily undone by management.

To gain further insight into the relationship between ATPs and target premiums, we split our takeover sample into two subsamples according to whether industry concentration is high or low: the unconcentrated subsample contains firms in industries in the lower quartile of the sample distribution of concentration, while the concentrated subsample contains firms in industries in the upper quartile of the sample distribution of concentration. This essentially means that we run regression (1) without the interaction term, separately in each of the two subsamples. Prediction 1 implies that we should see a positive effect of ATPs on target premiums, but only in concentrated industries.

The results of our sample-split analysis, reported in Table 5, are consistent with Prediction 1. In unconcentrated industries (Columns (3)-(4)), ATPs do not have a statistically significant effect on premi-

ums. By contrast, in concentrated industries (Columns (5)-(6)) targets with ATPs extract a substantial and statistically significant premium. Our estimates imply that ATPs increase target premiums by 15.6 percent in concentrated industries (Column (5)), equal to about half of the sample mean. Finally, in the full sample ATPs result in a 3.8% higher target premium (Column (1)), but the effect is only marginally significant, in line with the evidence from previous studies, such as Comment and Schwert (1995) and Schwert (2000). Thus, our evidence suggests that it is important to take industry structure into account.

As for the effect of firm and deal controls on premiums, our results are broadly in line with Schwert (2000) and Comment and Schwert (1995). In particular, we find some evidence that takeover premiums are negatively related to target firm size. The performance variables (except the P/E ratio) are not reliably related to takeover premiums. Hostility is not associated with differential premiums.

4.2 Test 2: Antitakeover Provisions and the Method of Payment in Takeovers

Prediction 3 states that industry concentration strengthens the positive effect of ATPs on the target’s likelihood of receiving an all-cash offer. To test this prediction, we specify a probit model that relates the probability that a target receives an all-cash offer to ATPs, industry concentration, and the interaction of the two. We use the following general regression specification:

$$\Pr(Cash_i) = f(b_0 + b_1 * ATP_i + b_2 * Concentration_i + b_3 * ATP_i * Concentration_i + b_4 * X_i + e_i) \quad (2)$$

where $Cash_i$ is an indicator variable taking the value of one if the target received an all-cash offer. ATP_i is the target’s level takeover protection, and $Concentration$ is our measure of concentration. We include standard firm controls such as the target’s ROE, sales growth, liquidity, debt-equity ratio, market to book, price earnings ratio, and size. We also add year effects to control for time trends in the average market reaction to acquisitions and Fama-French (1997) 48-industry fixed effects to control for clustering of acquisition activity at the industry level. Our variable of interest is the interaction of ATPs and industry concentration ($ATP_i * Concentration_i$). The null hypothesis is that the coefficient on this interaction

variable, b_3 , equals zero. We also include controls for other deal characteristics, such as hostility, auction, and tender.

Columns 1 and 2 of Table 9 report our results from estimating Equation (2). Consistent with Prediction 2, the interaction effect of ATPs and concentration is positive and statistically significant. The estimated coefficient on the interaction term (0.117 for SB) implies that ATPs increase the likelihood of receiving an all-cash offer by about 0.12 percent for each percentage point increase in concentration. Thus, the evidence strongly supports our argument that industry concentration is an important determinant of target shareholder wealth effects of ATPs.

The magnitude of our product market effect is also economically significant: holding all else equal, moving a target with ATPs from an unconcentrated to a concentrated industry, i.e. from the bottom to the top quartile of industry concentration, increases the likelihood it will receive an all-cash offer by about 6 percent, i.e. about 10 percent of the sample average probability of a cash offer (58 percent). Thus, consistent with Prediction 3, targets with ATPs are more likely to receive an all-cash offer if and only if they are in concentrated industries.

4.3 Test 3: Valuation Effect of Antitakeover Provisions

We turn next to Prediction 2 – i.e., there is a positive effect of ATPs on ex-ante measures of firm value, such as Tobin’s Q, but only in concentrated industries. To test Prediction 2, we use a specification analogous to regression (1), where we replace the dependent variable with (industry-adjusted) Tobin’s Q as a measure of ex-ante firm value.²³ In doing so, we follow earlier work on the association between corporate arrangements and firm value (see, for example, Bebchuk and Cohen (2005), Demsetz and Lehn (1985), Morck, Shleifer, and Vishny (1988), McConnell and Servaes (1990), Lang and Stulz (1994), Yermack (1996), Daines (2001)). We run this cross-sectional Q-regression on a number of standard controls (size, age, ROA, R&D, advertising expenses, and a dummy for Delaware) and include year- and industry-fixed

²³Following Kaplan and Zingales (1997), we measure Tobin’s Q as the ratio of market value of assets to book value of assets (item 6). Market value of assets is defined as book value of assets plus market equity (items 24-25) minus the sum of book equity (item 60) and balance sheet deferred taxes (item 74).

effects. We also control for internal governance by obtaining data on institutional blockholding, public pension fund ownership, and insider ownership.²⁴ Again, our variable of interest is the interaction of industry concentration and ATPs ($ATP_i * Concentration_i$), and our null hypothesis is that the coefficient on this interaction term, b_3 , equals zero.

The results are displayed in Table 6. In line with previous studies such as GIM, BCF, and Bebchuk and Cohen (2005), ATPs are associated, at 99% confidence, with lower firm value, arguably reflecting agency costs of entrenchment. However, consistent with Prediction 3, industry concentration is a significant mediating factor in the relation between ATPs and firm value: the interaction of ATPs and industry concentration is associated with higher firm value. This positive interaction effect is statistically significant and is twice as large as the coefficient on ATPs, so that ATPs can actually have a positive effect on value in concentrated industries. In columns (4)-(6), we control for corporate governance mechanisms other than ATPs, such as internal governance and managerial ownership respectively. This leaves both the negative effect of ATPs on firm value and the mediating effect of concentration quantitatively unchanged.

In order to gain further insight into the quantitative magnitude of our product market channel, we test for the effect of ATPs on firm value by concentration subsamples: unconcentrated, which contains firms in industries with low concentration (bottom quartile of the sample distribution), and concentrated, which contains firms in industries with high concentration (top quartile of the sample distribution). As in Test 2, this essentially means that we run our Q-regression without the interaction term, separately in the two subsamples. The evidence in Table 7 offers strong support for Prediction 3. In concentrated industries, there is a reliable positive association between ATPs and shareholder value, with a positive (up to 8%) and statistically significant coefficient on ATPs. However, within the unconcentrated subsample,

²⁴Our institutional blockholding and public pension fund data come from Cremers and Nair (2005), who argue that external (ATPs) and internal (institutional blockholding and public pension fund ownership) governance interact in their effect on firm value. Following Cremers and Nair (2005), we define blockholders as shareholders, external to the firm, with an ownership greater than 5% of the firm's outstanding shares. Data on the percentage of shares held by the firm's largest institutional blockholder and by the 18 largest public pension funds are collected from CDA Spectrum. Our insider ownership data are from the ExecuComp database compiled by Standard and Poor's. We define managerial ownership as the percentage of common equity held by the CEO through stocks and options. Since the ExecuComp database does not contain all companies that are part of the IRRC universe, we retrieve all missing CEO information by looking up the companies' proxy statements directly.

ATPs have a pronounced negative effect on shareholder value - entrenched firms have up to 10% lower valuation. These results hold consistently across different measures of ATP indices. Thus, our product market channel is strongly supported by the data.

An important feature of Prediction 2 is that it can help us to attack an alternative interpretation of our empirical results on target premiums (Tables 4-5). In fact, one could argue that, rather than increasing target premiums, the main effect of ATPs is to reduce a firm's probability of becoming a target, and somehow more so in concentrated industries. If this were the case, then the positive announcement effect we document in concentrated industries may be due to an anticipation, or likelihood, channel (e.g., Song and Walkling (2000)) rather than our product market channel. That is, target stock prices may rise more for firms with ATPs simply because the market is more surprised by the announcement of a takeover offer in concentrated industries.

The results of our test of Prediction 2 can rule out the anticipation hypothesis. To see this, consider that Tobin's Q, as an ex-ante measure of shareholder wealth, includes both the probability of receiving a takeover offer (p^T) as well as the premium expected upon takeover (V^T). In fact, it is standard in governance literature that uses Q-regressions (see, for example, Bebchuk and Cohen (2005), Bebchuk, Coates, and Subramanian (2002)) to use the following decomposition of ex-ante firm value: $Q = V^0 + p^T V^T$, where $V^T = V^A - V^0$ is the expected target premium, V^A is the value of the target if acquired and V^0 is the target's stand-alone value. Since in the data average target takeover premiums are positive, i.e. $V^T > 0$, then $dQ/dp^T > 0$. Thus, if the likelihood channel dominates, i.e. if $dp^T/dATPs < 0$, then ATPs reduce firm value, i.e. $dQ/dATPs < 0$. Vice versa, if our premium effect dominates, i.e. if $dV^T/dATPs > 0$, then ATPs increase firm value, i.e. $dQ/dATPs > 0$. To summarize, if an anticipation effect were at work in concentrated industries, ATPs would lower the likelihood of receiving a takeover offer and actually have a *negative* effect on Tobin's Q. By contrast, if ATPs increase target premiums in concentrated industries, as predicted by our model, then we should expect Prediction 2 to hold in the data.

Our finding that Prediction 2 is strongly supported by the data indicates that higher premiums to ATPs

in concentrated industries are not likely to be driven by the anticipation of a lower takeover probability of firms with ATPs in concentrated industries. Admittedly, this is a rather indirect strategy. In the next section, we address the anticipation hypothesis by using direct tests of takeover likelihood.

5 Robustness and Alternative Interpretations

5.1 Takeover Likelihood Tests

To further corroborate our results, we test directly whether ATPs lower the likelihood of receiving a takeover offer in concentrated industries – i.e., whether also the "entrenchment" effect varies across industries. Using our takeover sample, we identify which firms in the IRRC sample are acquired each year. We measure takeover probability using a probit model that predicts whether the firm received a takeover offer in a given calendar year, i.e. whether there was a takeover bid. We include the same set of firm controls as in Tables 4 and 5. These control variables have been used in previous literature on takeover likelihood (see, for example, Comment and Schwert (1995) and Schwert (2000)).

The results are reported in Columns (7)-(8) of Table 9. Consistent with the deterrence effect of ATPs found in Bates, Becher, and Lemmon (2007), we find that having a staggered board with poison pill reduces the probability of receiving a takeover offer. However, the deterrence effect does not vary across industry concentration. Thus, our finding of higher premiums to ATPs in concentrated industries is not likely to be driven by the anticipation of a lower takeover probability of firms with ATPs in concentrated industries.

Table 9 also summarizes the effect of ATPs on other takeover characteristics. While our model makes no direct predictions about such characteristics, we run a battery of additional tests to explore whether the effect of ATPs on takeover characteristics is consistent with the spirit of the model.

Columns 3 and 4 show estimates of a probit model that predicts whether the target is contested, i.e. whether there are multiple bidders competing. We include the same set of firm and deal controls as in Tables 4 and 5. Consistent with the spirit of our model, we do see more competition for targets in

concentrated industries, but the effect is not statistically significant. Thus, our finding of higher premiums to ATPs in concentrated industries is not likely to be driven by mechanical considerations, such as the fact that premiums are higher for contested targets. Columns 5 and 6 report estimates of a probit model that predicts whether a takeover offer is successful. The dependent variable is a dummy variable that equals one when a bid leads to an acquisition of a target firm (even if a different bidder is the acquirer), and zero otherwise. In line with previous research and consistent with the spirit of our model, we see neither evidence of a deterrence effect of ATPs, nor a differential in the deterrence effect across concentrated and unconcentrated industries.

5.2 Endogeneity

The correlation identified between ATPs and firm value raises the question of endogeneity. Do ATPs bring about a lower firm value, or is the correlation produced by the selection of ATPs by firms with lower value? A similar objection could be raised for our finding of the mediating effect of concentration. Simple OLS regressions that relate ATPs to firm value are likely to yield biased results if used to infer the causal impact of right-hand side variables on the left-hand side variable.

In order to address these concerns, we use an instrumental variable approach. In particular, we use industry concentration at IPO as our instrument for ATP measures. The idea is that concentration at IPO is arguably predetermined with respect to the subsequent decision to adopt ATPs. Moreover, Field and Karpoff (2002) document that a significant number of ATPs are adopted at IPO. Our first-stage regressions also include a number of other firm-level variables at IPO: the level of sales relative to other firms in the IPO year, firm's financial position at the time of IPO, and the level of R&D and advertising expenditures relative to other firms in the IPO year.

Using the estimated values of ATPs from this first-stage regression, we re-run the Q-regressions in Test 3 using two-stage least squares. The results, reported in Table 8, confirm our previous finding of a positive interaction between ATPs and industry concentration on firm value: at 99% confidence, ATPs are associated with lower firm value in unconcentrated industries, but with higher firm value in concentrated

industries. Thus, the conclusion we draw from our IV estimates is that our results on the valuation effect of ATPs are not spurious.

5.3 Other Robustness Checks

Table 10 shows that our main finding of an association between concentration and the wealth effect of ATPs is robust to using a variety of empirical proxies for concentration. Moreover, for all our tests, we verify that our results are robust to excluding observations in the stock market bubble period (years 1999 and 2000).

We also verify that our results on Tobin's Q are not driven by an operating performance channel. Core, Guay and Rusticus (2004) and Gompers, Ishii, and Metrick (2003) provide evidence that ATPs have a negative impact on operating performance. Since our product market channel affects value through expected premiums, rather than performance, we verify that there is no positive interaction effect of ATPs and concentration on standard measures of operating performance, such as ROA or ROE.

Finally, the results in Tables 5 and 7 use upper and lower concentration quartiles to classify industries as concentrated and unconcentrated, respectively. In Table 11 we explore robustness of results reported in Tables 5 and 7 to using sample median concentration to classify industries into concentrated/unconcentrated subsamples. The results are similar to those in Tables 5 and 7, both quantitatively and qualitatively.

6 Conclusion

This paper provides scientific grounding to the notion that governance creates value by examining whether and how the governance-value relationship varies across industries. To this end, we developed a new test of the importance of the market for corporate control. Within a model of competitive takeover bidding, we established that, depending on whether industry concentration is high or low, firm value increases or decreases with the number of antitakeover provisions. The key to our test is that our theory identifies when governance matters in the cross-section, while, at the same time, pointing to a specific reason why

it matters.

In a large dataset of manufacturing firms over the 1990 to 2005 period, we found reliable evidence consistent with the unique cross-sectional predictions of our model. In particular, we documented that (1) antitakeover provisions lead to higher takeover premiums, but only in concentrated industries; (2) antitakeover provisions lead to a higher probability of receiving an all-cash bid, but only in concentrated industries; and (3) antitakeover provisions are associated with higher shareholder value, but only in concentrated industries. Finally, we found that in unconcentrated industries antitakeover provisions destroy value by much more than previous studies, such as GIM and BCF, had recognized. Overall, these results offer a novel perspective over the current corporate governance debate and suggest that industry concentration is an important mediating factor in the governance-value relationship. Thus, governance reforms directed toward weakening takeover defenses may come with benefits, but also with costs.

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Appendix A. Proofs

Proof of Proposition (1).

We start by observing that concentrated industries have smaller number of firms, or greater dispersion in market shares, or both. We prove the proposition for two cases: 1) fixed number of firms (three) and asymmetric market shares ("market share effect"); and 2) symmetric n firms ("market size effect"). In both these extreme cases, λ is greater in concentrated industries, which implies that the proposition holds for intermediate cases as well.

1. Market share effect: Consider Bertrand differentiated product oligopoly with 3 firms, where one firm (the potential target) is a laggard. We characterize the effect of a merger on the losing bidder and show that this effect is larger when the laggard has a smaller market share, i.e. in more concentrated industries. Assume firm 1 and 2's cost of producing quantity q is given by $\kappa_1 q$, where $\kappa_1 < 1$. Firm 3's marginal cost of production is also constant, but at κ , with $\kappa_1 < \kappa < 1$. Let $q_i(P) = \left(1 - bp_i + \sum_{j \neq i} p_j\right)$ be the market-clearing output for good i . We will compare firm 2's profits under two scenarios: 1) firm 3, the laggard, is not taken over and the industry remains the same (status-quo); and 2) firm 3 is bought by firm 1.

1) Status-quo: There are three firms in the industry, and best-response prices satisfy $p_i = \frac{1}{2b} (1 + \sum_{j \neq i} p_j + b\kappa_i)$, $i = 1, 2, 3$. Since firms 1 and 2 are symmetric, $p_1 = p_2$, which gives equilibrium prices $p_1^* = p_2^* = \frac{(2b+1)(1+b\kappa_1)+b(\kappa-\kappa_1)}{2(b-1)(2b+1)}$ and $p_3^* = \frac{(2b+1)(1+b\kappa)-2b(\kappa-\kappa_1)}{2(b-1)(2b+1)}$. Using equilibrium prices, we can solve for status-quo profits for firms 1 and 2:

$$\pi_1^{sq} = \pi_2^{sq} = b \left(\frac{(2b+1)(1-(b-2)\kappa_1) + b(\kappa-\kappa_1)}{2(b-1)(2b+1)} \right)^2$$

2) Merger: Consider now the situation firm 3 is up for sale and where firms 1 and 2 bid for it in a takeover battle. We assume that the winner is firm 1, and it now produces both products with its pre-merger quality and cost, κ_1 . Firm 1's profits are now $\pi_m = (1 - bp_1 + p_2 + p_3)(p_1 - c_1) +$

$(1 - bp_3 + p_1 + p_2)(p_3 - c_1)$. Since firm 1 now produces both goods at the same cost, it will charge same price for both products, p_m . First-order conditions of optimality imply that best-response price for the merged firm satisfies $p_m = \frac{1+(b-1)\kappa_1+p_2}{2(b-1)}$. For firm 2, best-response price satisfies $p_2 = \frac{1}{2b} (1 + \sum_{j \neq 2} p_j + b\kappa_1)$. Equilibrium prices are given by $p_2^* = \frac{b+(b^2-1)\kappa_1}{(2b(b-1)-1)}$ and $p_m = \frac{(2b+1)+b\kappa_1(2b-1)}{2(2b(b-1)-1)}$, and the implied equilibrium profits for firm 2 (outsider to the merger) are

$$\pi_2^{ext} = b \left(\frac{b(1 - (b-2)\kappa_1)}{(2b(b-1) - 1)} \right)^2$$

Relatively to the status-quo, we obtain that the change in profit for the non-acquiring firm is given by $\pi_2^{sq} - \pi_2^{ext}$, and the sign of this expression depends on the sign of $\frac{b(\kappa - \kappa_1)}{2(b-1)(2b+1)} - \frac{(1-(b-2)\kappa_1)}{2(b-1)}$, i.e. $\pi_2^{sq} - \pi_2^{ext} > 0$ as long as

$$1 + (2 - b)\kappa_1 < \frac{b}{2b + 1} (\kappa - \kappa_1)$$

The main thing to note is that the effect of the merger on the rival depends on the degree of asymmetry in the product market, $\kappa - \kappa_1$. Moreover, this effect is increasing in $\kappa - \kappa_1$, i.e. the rival suffers relatively more and benefits relatively less when this asymmetry is greater. In fact, differentiating $\pi_2^{sq} - \pi_2^{ext}$ with respect to $(\kappa - \kappa_1)$, we obtain $\left(\frac{(2b+1)(1-(b-2)c_1)+b(c-c_1)}{2(b-1)(2b+1)} \right) \left(\frac{2b^2}{2(b-1)(2b+1)} \right)$, which is positive for all $b > 1$.

2. Market size effect: Consider Cournot differentiated product oligopoly with n firms, where one firm (the potential target) is a laggard. We characterize the effect of a merger on the losing bidder, and show that this effect is larger in industries with fewer firms, i.e. in more concentrated industries.²⁵ Firm 1 through $n - 1$'s marginal cost of production is 0. Firm n 's marginal cost of production is also constant, but at $\kappa > 0$. Firm n is the laggard, and will exit unless bought out by one of the other firms in the industry. We will compare firm 1 through $n - 1$'s profits under two scenarios: 1) firm n , the laggard, exits (status-quo); and 2) firm n is bought by one of the rivals (merger).

²⁵For comparability with the market-share effect, we appeal to the general property that with Bertrand competition profits converge faster to their competitive benchmark than in Cournot competition (Vives (2000), Chapter 6). Thus, the market size effect we derive for Cournot competition is the lower bound on the magnitude of this effect.

1) Status-quo: Let $P_i(Q) = \left(1 - q_i - \gamma \sum_{j \neq i} q_j\right)$ be the market-clearing output for good i . There are $n - 1$ firms in the industry, whose best-response function for output satisfies $q_i = \frac{1}{2} \left(1 - \gamma \sum_{j \neq i} q_j\right)$, $i = 1, \dots, n - 1$. In the symmetric equilibrium $q_1 = \dots = q_{n-1}$, which gives symmetric equilibrium quantities $q^* = \frac{1}{2 + \gamma(n-2)}$. Using equilibrium quantities, we can solve for status-quo profits

$$\pi^{sq} = \left(\frac{1}{2 + \gamma(n-2)}\right)^2$$

2) Merger: Consider now the situation where firm n is up for sale and where firms 1 through $n - 1$ bid for it in a takeover battle. We assume that the winner is firm 1, and it now produces both products with its pre-merger quality and cost. Firm 1's profits are now $\pi_1 = \left(1 - q_1 - \gamma \sum_{j \neq 1} q_j\right) q_1 + \left(1 - q_n - \gamma \sum_{j \neq n} q_j\right) q_n$. Since firm 1 now produces both goods, and cost is the same, it will produce same amount of output for both products, q_m . First-order conditions of optimality imply that best-response output for the merged firm satisfies $q_m = \frac{1 - \gamma \sum_{j \neq 1, n} q_j}{2(1 + \gamma)}$. For firms $k = 2, \dots, n - 1$, best-response quantities satisfy $q_k = \frac{1}{2} \left(1 - \gamma \sum_{j \neq k} q_j\right)$. Equilibrium outputs are given by $q = \frac{1}{(2 + \gamma(n-1) - \gamma^2)}$ and $q_m = \frac{(2 - \gamma)}{2(2 + \gamma(n-1) - \gamma^2)}$, and the implied equilibrium profits for non-merging firms are

$$\pi^{ext} = \left(\frac{1}{(2 + \gamma(n-1) - \gamma^2)}\right)^2$$

Relatively to the status-quo, we obtain that the change in profit for the non-acquiring firm is given by $\pi^{sq} - \pi^{ext}$, and the sign of this expression depends on the sign of

$$\frac{\gamma(1 - \gamma)}{(2 + \gamma(n-2))(2 + \gamma(n-1) - \gamma^2)}$$

Thus, $\pi_2^{sq} - \pi_2^{ext} > 0$ since $\gamma < 1$. Further, $\frac{\partial(\pi^{sq} - \pi^{ext})}{\partial n} = -2\gamma \left(\left(\frac{1}{(2 + \gamma(n-2))}\right)^2 - \left(\frac{1}{(2 + \gamma(n-1) - \gamma^2)}\right)^2 \right) < 0$.

■

Proof of Proposition (2). Without ATPs: We first show that no pooling equilibrium exists. Any

pooling equilibrium can exist only for a bid between 0 and $L + \lambda$. Consider a pooling bid below $q(L + \lambda)$. Whenever $(1 - q)(H - L) > c$, 2_H enters for any pooling equilibrium, while 2_L does not. Therefore, the best strategy for 1_L is to bid zero. Thus, the only possible pooling is a bid of zero. This is an equilibrium if bidder 2 believes that any deviation from this equilibrium is done by 1_L . This belief system is not sensible in the sense of Kreps' (1984) intuitive criterion as 1_H can deviate in such a way that 1_L will not find it profitable to mimic. To show this, consider a bid of $q(L + \lambda) + e$. 1_L prefers to bid zero even if bidder 2 will infer its type to be H upon bidding this bid. This is because a bid of zero yields $(1 - q)L - q\lambda$ for 1_L , while bidding $q(L + \lambda) + e$ yields $(1 - q)L - q\lambda - e$. However, if bidder 2 considers $q(L + \lambda) + e$ to be bid by 1_H , 1_H finds it profitable to bid it (for small enough e) as its expected gains from a bid of zero, $(1 - q)H - q\lambda (= H - qH - q\lambda)$, are smaller than from a bid of $q(L + \lambda) + e$, i.e., $H - q(L + \lambda) - e$. Therefore, no pooling bid below $q(L + \lambda)$ exists. Given this discussion, it is also clear that no pooling equilibria above $q(L + \lambda)$ exist as 1_L prefers to bid zero.

A separating equilibrium where 1_H bids higher than 1_L , say $q(L + \lambda) + e$, can exist if bidder 2 interprets every bid below $q(L + \lambda) + e$ as a bid made by the low type. However, such a belief system is unreasonable in the sense that 1_L is worse off bidding above $q(L + \lambda)$ even if it is taken to be of type H . Therefore, again using the intuitive criterion, we assume that, if bidder 2 observes a bid above $q(L + \lambda)$, it believes that it has been made by 1_H , and, if it observes a bid below $q(L + \lambda)$, it believes that with a high enough probability it faces 1_L . This gives a unique equilibrium where 1_H bids $q(L + \lambda)$ and 1_L bids zero. For this equilibrium to hold, it remains to be shown that, for 1_H , bidding $q(L + \lambda)$ and revealing itself to be of type H is preferable to bidding zero. If 1_H bids zero, 2_H competes and 1_H makes expected profits of $(H - 0)(1 - q) - q\lambda = H - qH - q\lambda$, which are less than its profits under separation, $H - qL - q\lambda$.

With ATPs: If 1_L bids 0 (or anything below $L - \frac{c}{1-q} + \lambda$), the target finds it profitable to reject the bid and induce 2_L to enter because $(1 - q)L - c > 0$ (from Assumption 1(ii)). This condition ensures that the payoff to the target from using ATPs, $(1 - q)(L - c + \lambda) + q(L - c + \lambda)$, is higher than the payoff from accepting the bid of 0, $q(L + \lambda)$. Therefore, 1_L will bid at least $L - \frac{c}{1-q} + \lambda$ in equilibrium. Now for a separating equilibrium to exist, 1_L must not find it optimal to imitate 1_H . Since a bid of $L - \frac{c}{1-q} + \lambda$

yields $(1 - q)(L - L + \frac{c}{1-q} - \lambda) - q\lambda = c - \lambda$ to 1_L , it must follow that $c - \lambda \geq L - b$, where b is what 1_H bids. Thus, 1_H must bid at least $L - c + \lambda$. If $q(H - c + \lambda) \geq L - c + \lambda$, 1_H will bid $q(H - c + \lambda)$ as discussed in Proposition (2). However, if the reverse holds, then 1_H bids $L - c + \lambda$ and the following is the unique reasonable separating equilibrium:

1. 1_H bids $\max\{q(H - c + \lambda), L - c + \lambda\}$, 1_L bids $L - \frac{c}{1-q} + \lambda$.
2. The target rejects any bid below $L - \frac{c}{1-q} + \lambda$ or if the bid is between $L - c + \lambda$ and $q(H - c + \lambda)$ in the case $q(H - c + \lambda) > L - c + \lambda$. In all other cases, the target accepts the bid.
3. 2_H enters if the bid is below $L - \frac{c}{1-q} + \lambda$ and if the target has rejected the initial bid.
4. The belief system is as follows: any bid below $L - \frac{c}{1-q} + \lambda$ is made by 1_L , and any bid above it is made by 1_H .

It is easy to see that, in both cases, target shareholders are better off with ATPs.

We now show that no pooling equilibrium with sensible beliefs is possible. Two cases need to be considered. The first is a pooling of zero, which occurs when the target does not reject this pooling bid. The other case is a pooling bid above zero, which prevents the use of ATPs. The target uses ATPs under pooling if, given a pooling bid b , its payoff from using ATPs exceeds its payoff from not using ATPs, i.e.,

$$(1 - q)(L - c + \lambda) + q(1 - q)(L + \lambda) + q^2(H - c + \lambda) \geq q^2(H + \lambda) + q(1 - q)(L + \lambda) + (1 - q)b \quad (3)$$

The left-hand side of (3) represents the payoff for the target from using ATPs, which induces 2_L to enter. (2_H enters anyway.) The right-hand side is the payoff from not using an ATP. The pooling bid is now $\max\{0, b_p\}$, where b_p is the solution for (3) as an equality and is given by

$$b_p = L + \lambda - c - \frac{q^2}{(1 - q)^2}c$$

Case 1: $b_p \leq 0$. The unique pooling equilibrium possible is a bid of zero, as explained in Proposition

1. Now, 1_L 's payoff in equilibrium is $(1 - q)L - q\lambda$. Therefore, it does not mimic any bid above $q(L + \lambda)$, no matter what the belief system is. However, if 1_H bids $q(H - c + \lambda) > q(L + \lambda)$, and it is believed to be 1_H , its payoff is $H - q(H - c + \lambda) = (1 - q)H + q(c - \lambda)$. This payoff is greater than $(1 - q)H - q\lambda$, the payoff it gets under a pooling of zero. Therefore, this equilibrium cannot hold.

Case 2: $b_p > 0$. In this case, the pooling bid is b_p . Under this equilibrium, 1_L 's payoff is $(1 - q)(L - b_p) - q\lambda = (1 - q)c + \frac{q^2}{1 - q}c - \lambda$. Therefore, 1_L does not mimic any bid above $L - (1 - q)c - \frac{q^2}{1 - q}c + \lambda$. 1_H 's payoff, in equilibrium, is $(1 - q)(H - b_p) - q\lambda = (1 - q)(H - L) - \lambda + (1 - q)c + \frac{q^2}{1 - q}c$. On the other hand, if 1_H bids $\max\left\{q(H - c + \lambda), L - (1 - q)c - \frac{q^2}{1 - q}c + \lambda\right\}$ and is believed to be 1_H , its payoff is greater than under pooling. Under the bid $q(H - c + \lambda)$, the result follows from the fact that $b_p > 0$, and, under a bid of $L - (1 - q)c - \frac{q^2}{1 - q}c + \lambda$, its payoff is $H - L + (1 - q)c + \frac{q^2}{1 - q}c - \lambda$. Therefore, this equilibrium breaks down under Kreps' criterion. ■

Proof of Proposition (3). The value of λ for which target shareholders are just indifferent between having and not having ATPs solves $\Delta\Pi = 0$, or,

$$(1 - q)^2 \lambda = C - q^2(H - L - c) - (1 - q)^2 \left(L - \frac{c}{1 - q} \right)$$

The left-hand side of this equation is monotone increasing in λ , while the RHS does not depend on λ . Thus, there exists λ^* such that for every $\lambda \geq \lambda^*$, $\alpha^* = 1$, and for every $\lambda < \lambda^*$, $\alpha^* = 0$. Moreover, monotonicity of $\Delta\Pi$ implies that such λ^* is unique. ■

Appendix B. Tables and Figures

Table 1: Summary Statistics

In the takeover sample (Panel A), the level of antitakeover protection is measured by SB&P, a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and SB, a dummy variable which equals 1 if the firm has a staggered board. Takeover premium is the cumulative abnormal return to the target firm's stock for trading days (-63, 126) relative to the date of the first bid. Hostility is a dummy variable where 1 signifies that the target firm resisted an unsolicited offer as determined by SDC. Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer, Success equals one if the deal is completed. ROE is earnings divided by average stockholders (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholders equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Data is for 1990-2005.

In the IRRC sample (Panel B), the level of antitakeover protection is measured by SB&P, a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, the E-index from Bebchuk, Cohen, and Ferrell (2004), and the G-index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Concentration is the market share of four largest firms in the industry. Managerial Ownership is the percentage of common equity held by the CEO through stocks and options. Block is percentage of common stock held by the firm's largest institutional blockholder. Pension Fund is percentage of common stock held by the 18 largest public pension funds as a group (Cremers and Nair (2005)). Size is the log of the book value of assets at the beginning of the year, winsorized at 1%. Tobin's Q is the market value of assets over the book value of assets, winsorized at 1%. State Laws is a binary variable where 1 signifies that the state of incorporation has high (greater than 4) number of state antitakeover statutes. Delaware is binary where 1 signifies that the firm is incorporated in Delaware. ROA is the ratio of net income to assets. R&D is the ratio of research and development expenditures to sales. Advertising is the ratio of advertising and sales expense to sales. Capex is the ratio of capital expenditures to assets. Dividend is the ratio of dividends to book equity. Cashflow is the ratio of earnings before extraordinary items plus depreciation to assets. Data is annual for the 1990-2005 period.

Panel A: Takeover sample

Variable	Observations	Mean	Median	Standard Deviation
SB&P	888	1.26	1	0.65
SB	888	0.50	1	0.50
Concentration	888	0.39	0.36	0.17
Target Premium	888	0.34	0.33	0.56
Hostility	888	0.24	0	0.44
Auction	888	0.11	0	0.31
Cash	866	0.58	1	0.46
Tender Offer	888	0.31	0	0.46
Success	888	0.86	1	0.35
ROE	814	0.11	0.08	0.12
Sales Growth	808	0.09	0.08	0.32
Liquidity	820	0.33	0.31	0.21
D/E	817	0.59	0.23	1.27
M/B	814	2.60	1.64	5.09
P/E	767	16.71	11.72	20.21
Size	888	6.89	5.63	3.48

Panel B: IRRC sample

Variable	Observations	Mean	Median	Standard Deviation
SB&P	8969	1.21	1	0.78
E	8969	2.36	2	1.34
G	8969	9.39	9	2.80
Concentration	8819	0.42	0.39	0.18
Managerial Ownership	8941	0.05	0.01	0.16
Block	8969	0.50	1	0.50
Pension Fund	8969	0.41	0	0.49
Size	8969	7.12	6.99	1.49
Tobin's Q	8251	1.92	1.49	1.40
State Laws	8969	0.33	0	0.47
Delaware	8969	0.57	1	0.50
ROA	8969	0.14	0.14	0.10
R&D	8969	0.08	0.02	0.64
Advertising	8969	0.04	0.02	0.05
Capex	8880	0.11	0.09	0.07
Dividend	8969	0.08	0.04	0.18
Cashflow	8969	0.41	0.35	1.18

Table 2: Correlations

In the takeover sample (Panel A), the level of antitakeover protection is measured by SB&P, a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and SB, a dummy variable which equals 1 if the firm has a staggered board. Takeover premium is the cumulative abnormal return to the target firm's stock for trading days (-63, 126) relative to the date of the first bid. Hostility is a dummy variable where 1 signifies that the target firm resisted an unsolicited offer as determined by SDC. Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer, Success equals one if the deal is completed. ROE is earnings divided by average stockholders (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholders equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the log of the market value of common stock, all measured at the end of the fiscal year before the first bid. Data is for 1990-2005.

In the IRRC sample (Panel B), the level of antitakeover protection is measured by SB&P, a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, the E-index from Bebchuk, Cohen, and Ferrell (2004), and the G-index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Concentration is the market share of four largest firms in the industry. Managerial Ownership is the percentage of common equity held by the CEO through stocks and options. Block is percentage of common stock held by the firms largest institutional blockholder. Pension Fund is percentage of common stock held by the 18 largest public pension funds as a group (Cremers and Nair (2005)). Size is the log of the book value of assets at the beginning of the year, winsorized at 1%. Tobin's Q is the market value of assets over the book value of assets, winsorized at 1%. State Laws is a binary variable where 1 signifies that the state of incorporation has high (greater than 4) number of state antitakeover statutes. Delaware is binary where 1 signifies that the firm is incorporated in Delaware. ROA is the ratio of net income to assets. R&D is the ratio of research and development expenditures to sales. Advertising is the ratio of advertising and sales expense to sales. Capex is the ratio of capital expenditures to assets. Dividend is the ratio of dividends to book equity. Cashflow is the ratio of earnings before extraordinary items plus depreciation to assets. Data is annual for the 1990-2005 period.

Panel A: Takeover sample

	SB&P	SB	Conc	Target Premium	Host	Auction	Cash	Tender Offer	Suc	ROE	Sales Growth	Liq	D/E	M/B	P/E	Size
SB&P	1															
SB	0.80	1														
Concentration	0.05	0.02	1													
Target Premium	0.01	0.01	0.03	1												
Hostility	0.10	0.05	0.03	0.003	1											
Auction	-0.004	-0.03	-0.01	0.03	0.05	1										
Cash	0.02	0.002	0.03	0.03	0.30	0.15	1									
Tender Offer	0.07	0.01	0.05	0.01	0.20	0.23	0.41	1								
Success	0.05	0.08	0.003	0.20	-0.06	-0.08	-0.14	0.04	1							
ROE	0.03	0.03	0.02	0.01	-0.01	0.01	0.02	0.01	-0.01	1						
Sales Growth	-0.02	-0.01	-0.11	-0.05	0.06	-0.05	-0.06	-0.03	0.04	-0.002	1					
Liquidity	-0.13	-0.03	-0.08	0.02	-0.14	-0.08	-0.05	-0.07	0.09	0.01	0.14	1				
D/E	0.04	0.01	0.02	-0.04	0.02	0.04	0.01	0.01	-0.02	0.05	0.01	-0.17	1			
M/B	0.03	0.03	-0.02	-0.06	0.01	-0.04	-0.04	-0.05	0.06	0.03	0.21	0.03	0.33	1		
P/E	-0.04	0.04	0.001	-0.03	0.02	-0.01	-0.02	-0.01	-0.08	0.001	0.01	-0.03	-0.01	0.01	1	
Size	0.15	0.01	0.06	-0.22	0.38	0.18	0.26	0.44	-0.30	0.004	0.01	-0.33	0.07	-0.01	0.04	1

Panel B: IRRC sample

	SB&P	E	G	Conc	Man. Own	Block	Pen. Fund	Size	Q	State	Del	ROA	R&D	Adv	Capex	Div	Cash-flow
SB&P	1																
E	0.80	1															
G	0.65	0.76	1														
Concentration	0.068	0.09	0.09	1													
Manag. Own	-0.14	-0.15	-0.12	0.04	1												
Block	-0.07	-0.04	-0.06	0.001	0.03	1											
Pen. Fund	0.19	0.13	0.16	0.01	-0.07	-0.20	1										
Size	0.02	0.01	0.16	0.21	0.10	-0.03	0.18	1									
Q	-0.07	-0.12	-0.07	0.02	0.25	-0.05	0.02	0.06	1								
State	0.09	0.21	0.21	-0.04	-0.02	-0.04	0.02	0.003	0.0001	1							
Del	-0.03	-0.15	-0.10	0.04	0.03	0.06	-0.001	0.08	-0.03	-0.81	1						
ROA	-0.01	-0.02	0.02	-0.01	0.14	-0.02	0.04	0.18	0.40	0.06	-0.07	1					
R&D	-0.01	-0.03	-0.04	0.003	-0.02	-0.03	-0.03	-0.12	0.03	-0.01	0.02	-0.43	1				
Adv	-0.10	-0.08	-0.04	0.07	0.14	-0.002	-0.05	0.08	0.14	-0.03	0.02	0.07	-0.01	1			
Capex	-0.09	-0.16	-0.16	0.01	0.16	-0.05	0.03	-0.02	0.28	-0.07	0.06	0.16	0.03	0.06	1		
Div	-0.06	-0.05	-0.02	-0.03	0.03	-0.06	-0.01	-0.02	0.15	0.06	-0.08	0.15	0.01	0.21	-0.01	1	
Cflow	-0.05	-0.04	-0.03	-0.01	0.10	-0.01	-0.01	0.05	0.19	0.03	-0.04	0.51	-0.19	0.05	0.17	0.19	1

Table 3: ATPs and Target Premiums by Industry Concentration - Univariate Analysis

The level of antitakeover protection is measured by SB&P and SB. SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. For all indices, higher index value corresponds to more ATPs. Target takeover premium is the cumulative abnormal return to the target firm's stock for trading days (-63, 126) relative to the date of the first bid for successful and unsuccessful takeover bids for exchange-listed target firms, 1990-2005. Concentration is the market share of four largest firms in the industry. Unconcentrated industries corresponds to the bottom concentration quartile. Concentrated industries corresponds to the top concentration quartile. Data is for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Index	Sample	Democracy (1)	Dictatorship (2)	Difference (2)-(1)	t-test of difference
SB&P	All	0.323 N=438	0.372 N=450	0.049	1.407
	Unconcentrated	0.345 N=102	0.315 N=118	-0.029	0.452
	Concentrated	0.264 N=105	0.406 N=133	0.142***	2.237
SB	All	0.331 N=438	0.371 N=450	0.040	1.179
	Unconcentrated	0.362 N=112	0.294 N=108	-0.068	1.070
	Concentrated	0.277 N=114	0.412 N=110	0.135***	2.120

Table 4: ATPs and Firm Value – Target Premiums

This table reports pooled OLS regressions of the takeover premium (the cumulative abnormal return to the target firms stock for trading days (-63, 126) relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1990-2005. ATPs are measured by SB&P in (1) and (3), and SB in (2) and (4). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. Both indices are from the IRRC dataset. Concentration is the market share of four largest firms in the industry, where industry is defined by four-digit SIC code. ROE is earnings divided by average stockholders (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholders equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Hostility is a dummy variable where 1 signifies that the target firm resisted an unsolicited offer as determined by SDC. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. In addition, several variables that may be only known during the takeover contest are included in the model. Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer. Standard errors are robust to heteroskedasticity. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

	Baseline		Deal Controls	
	(1)	(2)	(3)	(4)
<i>ATPs</i>				
SB&P	-0.109*		-0.091	
	(0.066)		(0.061)	
SB&P*Concentration	0.374***		0.331***	
	(0.149)		(0.031)	
SB		-0.065*		-0.059
		(0.038)		(0.039)
SB*Concentration		0.230***		0.217***
		(0.069)		(0.064)
<i>Firm & Industry</i>				
Concentration	-0.219	-0.141	-0.181	-0.121
	(0.163)	(0.122)	(0.165)	(0.124)
Size	-0.026***	-0.027***	-0.043***	-0.044***
	(0.007)	(0.007)	(0.011)	(0.011)
Liquidity	-0.195***	-0.180***	-0.222***	-0.210***
	(0.062)	(0.065)	(0.061)	(0.063)
D/E	-0.013	-0.013	-0.014	-0.013
	(0.009)	(0.009)	(0.009)	(0.009)
M/B	-0.009	-0.009	-0.007	-0.007
	(0.009)	(0.009)	(0.008)	(0.008)
P/E	-0.004***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)
Sales Growth	-0.094**	-0.091*	-0.093*	-0.090*
	(0.047)	(0.048)	(0.049)	(0.050)
ROE	-0.023***	-0.023***	-0.021***	-0.022***
	(0.007)	(0.008)	(0.007)	(0.008)
<i>Deal</i>				
Hostility			0.048	0.049
			(0.049)	(0.049)
Auction			0.094**	0.093**
			(0.044)	(0.045)
Cash			0.083	0.083
			(0.052)	(0.052)
Tender			0.194***	0.201***
			(0.074)	(0.074)
R ²	12.1%	12.0%	13.9%	13.8%
Observations	700	700	700	700

Table 5: ATPs and Firm Value – Target Premiums by Concentration

This table reports pooled OLS regressions of the takeover premium (the cumulative abnormal return to the target firms stock for trading days (-63, 126) relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1990-2005. This regression is performed on subsamples corresponding to top and bottom industry concentration quartiles. Concentration is the market share of four largest firms in the industry, where industry is defined by four-digit SIC code. ATPs are measured by SB&P in (1), (3), and (5), and SB in (2), (4), and (6). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. Both indices are from the IRRC dataset. ROE is earnings divided by average stockholders (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholders equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Hostility is a dummy variable where 1 signifies that the target firm resisted an unsolicited offer as determined by SDC. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. In addition, several variables that may be only known during the takeover contest are included in the model. Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer. Standard errors are robust to heteroskedasticity. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Variable	All		Unconcentrated		Concentrated	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	0.038*		-0.040		0.156***	
	(0.021)		(0.044)		(0.035)	
SB		0.027		-0.111		0.189***
		(0.026)		(0.073)		(0.059)
<i>Firm</i>						
Size	-0.043***	-0.042***	-0.046*	-0.045*	-0.036***	-0.034**
	(0.010)	(0.010)	(0.024)	(0.024)	(0.013)	(0.014)
Liquidity	-0.220***	-0.231***	-0.202	-0.193	-0.067	-0.094
	(0.060)	(0.062)	(0.183)	(0.177)	(0.205)	(0.200)
D/E	-0.012	-0.012	-0.028	-0.031	0.084**	0.088**
	(0.009)	(0.009)	(0.024)	(0.024)	(0.038)	(0.038)
M/B	-0.007	-0.007	-0.026	-0.025	-0.022*	-0.022
	(0.008)	(0.008)	(0.019)	(0.019)	(0.013)	(0.014)
P/E	-0.004***	-0.004***	-0.005**	-0.005**	-0.002	-0.002
	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.003)
Sales Growth	-0.092*	-0.093*	-0.102	-0.098	-0.247	-0.246
	(0.048)	(0.050)	(0.174)	(0.182)	(0.155)	(0.155)
ROE	-0.022***	-0.022***	-0.018***	-0.018***	-0.351	-0.333
	(0.007)	(0.007)	(0.004)	(0.004)	(0.223)	(0.209)
<i>Deal</i>						
Hostility	0.055	0.057	0.056	0.065	0.006	0.002
	(0.050)	(0.049)	(0.130)	(0.129)	(0.084)	(0.087)
Auction	0.090**	0.089*	0.005	0.011	0.062	0.065
	(0.045)	(0.046)	(0.081)	(0.077)	(0.089)	(0.091)
Cash	0.076	0.072	0.024	0.013	0.113	0.110
	(0.054)	(0.055)	(0.177)	(0.176)	(0.145)	(0.142)
Tender	0.215***	0.216***	0.291**	0.290**	0.277**	0.267**
	(0.077)	(0.076)	(0.130)	(0.133)	(0.126)	(0.126)
<i>t</i> -test					3.133	3.171
R ²	13.3%	13.2%	27.6%	28.6%	29.3%	28.4%
Observations	700	700	175	175	173	173

Table 6: ATPs and Firm Value – Tobin’s Q

This table reports pooled OLS regressions of industry-adjusted Tobin’s Q on measures of ATPs and other governance characteristics. Tobin’s Q is the market value of assets over the book value of assets, winsorized at 1% and adjusted for median Tobin’s Q in the industry. Industry is defined by four-digit SIC code. ATPs are measured by SB&P (columns (1) and (4)), E (columns (2) and (5)), and G (columns (3) and (6)) indices. SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and is from the IRRC dataset. The E index is from Bebchuk, Cohen, and Ferrell (2004), and the G index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Concentration is the market share of four largest firms in the industry. Size is assets at the beginning of the year, industry-adjusted. Age is number of years since firm was listed. Managerial Ownership is the percentage of common equity held by the CEO through stocks and options. Block is percentage of common stock held by the firms largest institutional blockholder. Pension Fund is percentage of common stock held by the 18 largest public pension funds as a group (Cremers and Nair (2005)). Our regressions also include the ratio of R&D expenditures to sales, the ratio of advertising and sales expense to sales, the ratio of capital expenditures to assets, the ratio of dividends to book equity, the ratio of earnings before extraordinary items plus depreciation to assets, the ratio of long-term debt to assets, and a dummy for incorporation in Delaware. These coefficients are omitted from the table for brevity, and are available upon request. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. Standard errors are robust to heteroskedasticity and arbitrary serial correlation within industry-year cells. Data is annual for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Variable	Baseline			Governance Controls		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	-0.048*** (0.014)			-0.059*** (0.012)		
Concentration*SB&P	0.075** (0.031)			0.109*** (0.035)		
E		-0.046*** (0.010)			-0.052*** (0.008)	
Concentration*E		0.053*** (0.016)			0.075*** (0.019)	
G			-0.011*** (0.004)			-0.018*** (0.005)
Concentration*G			0.025*** (0.008)			0.036*** (0.012)
<i>Firm & Industry</i>						
Concentration	-0.084* (0.049)	-0.085* (0.048)	-0.084* (0.049)	-0.053 (0.052)	-0.050 (0.042)	-0.052 (0.048)
Size	0.016* (0.009)	0.016* (0.009)	0.017* (0.010)	0.006 (0.009)	0.006 (0.010)	0.004 (0.010)
Age	-0.053*** (0.006)	-0.051*** (0.006)	-0.049*** (0.006)	-0.048*** (0.006)	-0.048*** (0.006)	-0.044*** (0.006)
<i>Other Governance</i>						
Managerial Ownership				0.111*** (0.015)	0.108*** (0.015)	0.112*** (0.015)
(Managerial Ownership) ²				-0.044*** (0.010)	-0.042*** (0.010)	-0.044*** (0.010)
Block				-0.036** (0.018)	-0.038** (0.018)	-0.036** (0.018)
Pension Fund				0.043** (0.018)	0.047** (0.018)	0.042** (0.018)
R ²	26.8%	27.2%	26.8%	32.7%	33.0%	32.7%
Observations	7841	7841	7841	7841	7841	7841

Table 7: ATPs and Firm Value – Tobin’s Q by concentration

This table reports pooled OLS regressions of industry-adjusted Tobin’s Q on measures of ATPs and other governance characteristics. Tobin’s Q is the market value of assets over the book value of assets, winsorized at 1% and adjusted for median Tobin’s Q in the industry. Industry is defined by four-digit SIC code. This regression is performed on subsamples corresponding to top and bottom industry concentration quartiles. Concentration is the market share of four largest firms in the industry. ATPs are measured by the SB&P (columns (1), (4) and (7)), E (columns (2), (5), and (8)), and G (columns (3), (6) and (9)) indices. SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and is from the IRRC dataset. The E index is from Bebchuk, Cohen, and Ferrell (2004), and the G index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Size is assets at the beginning of the year, industry-adjusted. Age is number of years since firm was listed. Managerial Ownership is the percentage of common equity held by the CEO through stocks and options. Block is percentage of common stock held by the firms largest institutional blockholder. Pension Fund is percentage of common stock held by the 18 largest public pension funds as a group (Cremers and Nair (2005)). Our regressions also include the ratio of R&D expenditures to sales, the ratio of advertising and sales expense to sales, the ratio of capital expenditures to assets, the ratio of dividends to book equity, the ratio of earnings before extraordinary items plus depreciation to assets, and the ratio of long-term debt to assets, and a dummy for incorporation in Delaware. These coefficients are omitted from the table for brevity, and are available upon request. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. Standard errors are robust to heteroskedasticity and arbitrary serial correlation within industry-year cells. Data is annual for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Variable	All			Unconcentrated			Concentrated		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>ATPs</i>									
SB&P	-0.015** (0.007)			-0.041*** (0.011)			0.041*** (0.014)		
E		-0.022*** (0.004)			-0.041*** (0.008)			0.023*** (0.007)	
G			-0.005*** (0.001)			-0.015*** (0.003)			0.019*** (0.006)
<i>Firm</i>									
Size	0.006 (0.009)	0.006 (0.009)	0.007 (0.009)	0.043*** (0.013)	0.048*** (0.012)	0.049*** (0.013)	0.030* (0.016)	0.026* (0.016)	0.027* (0.016)
Age	-0.049*** (0.006)	-0.047*** (0.006)	-0.046*** (0.006)	-0.001 (0.012)	0.001 (0.013)	0.006 (0.013)	-0.096*** (0.016)	-0.099*** (0.016)	-0.108*** (0.015)
<i>Other Governance</i>									
Managerial Ownership	0.112*** (0.015)	0.108*** (0.015)	0.112*** (0.015)	0.097*** (0.023)	0.089*** (0.022)	0.095*** (0.023)	0.191*** (0.034)	0.182*** (0.035)	0.188*** (0.034)
(Managerial Ownership) ²	-0.044*** (0.010)	-0.042*** (0.010)	-0.044*** (0.010)	-0.041** (0.020)	-0.037* (0.019)	-0.040** (0.019)	-0.128*** (0.037)	-0.123*** (0.037)	-0.125*** (0.036)
Block	-0.037** (0.018)	-0.038** (0.018)	-0.036** (0.018)	-0.098*** (0.024)	-0.100*** (0.024)	-0.094*** (0.024)	-0.021 (0.036)	-0.027 (0.036)	-0.020 (0.036)
Pension Fund	0.043** (0.018)	0.048** (0.018)	0.042** (0.018)	0.028 (0.032)	0.022 (0.031)	0.020 (0.031)	0.078** (0.039)	0.094** (0.038)	0.080** (0.038)
R ²	29.7%	30.0%	29.7%	41.7%	42.4%	41.9%	40.6%	40.4%	41.0%
Observations	7841	7841	7841	1943	1943	1943	1997	1997	1997

Table 8: ATPs and Tobin's Q – IV analysis

This table reports 2SLS regressions of industry-adjusted Tobin's Q on measures of ATPs and other governance characteristics. Tobin's Q is the market value of assets over the book value of assets, winsorized at 1% and adjusted for median Tobin's Q in the industry. Industry is defined by four-digit SIC code. This regression is performed on subsamples corresponding to top and bottom industry concentration quartiles. Concentration is the market share of four largest firms in the industry. We instrument for ATPs using concentration in the firm's IPO year and a number of other firm-level variables at IPO: the level of sales relative to other firms in the IPO year, firm's financial position at the time of IPO, and the level of R&D and advertising expenditures relative to other firms in the IPO year (see column 3 in Table 3). ATPs are measured by the SB&P (columns (1) and (4)), E (columns (2) and (5)), and G (columns (3) and (6)) indices. SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and is from the IRR dataset. The E index is from Bebchuk, Cohen, and Ferrell (2004), and the G index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Size is assets at the beginning of the year, industry-adjusted. Age is number of years since firm was listed. Managerial Ownership is the percentage of common equity held by the CEO through stocks and options. Block is percentage of common stock held by the firm's largest institutional blockholder. Pension Fund is percentage of common stock held by the 18 largest public pension funds as a group (Cremers and Nair (2005)). Our regressions also include the ratio of R&D expenditures to sales, the ratio of advertising and sales expense to sales, the ratio of capital expenditures to assets, the ratio of dividends to book equity, the ratio of earnings before extraordinary items plus depreciation to assets, and the ratio of long-term debt to assets, and a dummy for incorporation in Delaware. These coefficients are omitted from the table for brevity, and are available upon request. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. Standard errors are robust to heteroskedasticity and arbitrary serial correlation within industry-year cells. Data is annual for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Variable	Unconcentrated			Concentrated		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	-0.057*** (0.022)			0.034*** (0.010)		
E		-0.038*** (0.013)			0.017** (0.007)	
G			-0.021*** (0.008)			0.012*** (0.004)
<i>Firm</i>						
Size	0.008 (0.006)	0.008 (0.006)	0.004 (0.006)	0.029 (0.036)	0.031 (0.037)	0.023 (0.029)
Age	-0.049*** (0.012)	-0.050*** (0.012)	-0.067*** (0.017)	-0.078** (0.037)	-0.080** (0.039)	-0.101** (0.042)
<i>Other Governance</i>						
Managerial Ownership	0.149*** (0.014)	0.143*** (0.014)	0.148*** (0.013)	0.217*** (0.069)	0.216*** (0.075)	0.222*** (0.075)
(Managerial Ownership) ²	-0.072*** (0.011)	-0.067*** (0.011)	-0.071*** (0.011)	-0.149* (0.074)	-0.148* (0.072)	-0.153*** (0.073)
Block	-0.014 (0.012)	-0.017 (0.011)	-0.014 (0.012)	-0.046* (0.026)	-0.048* (0.024)	-0.041* (0.022)
Pension Fund	0.024 (0.016)	0.027* (0.015)	0.025* (0.014)	0.016 (0.077)	0.022 (0.070)	0.016 (0.054)
R ²	23.8%	24.2%	23.6%	29.4%	28.0%	27.2%
Observations	1943	1943	1943	1997	1997	1997

Table 9: Robustness Analysis – ATPs and Takeover Characteristics

This table reports pooled probit regressions of takeover characteristics (method of payment (Columns (1)-(2)), likelihood of auction (Columns (3)-(4)), likelihood of success (Columns (5)-(6)) and takeover probability (Columns (7)-(8)) for exchange-listed target firms, 1990-2005. ATPs are measured by SB&P in (1), (3), (5), and (7), and SB in (2), (4), (6), and (8). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. Both indices are from the IRRC dataset. Concentration is the market share of four largest firms in the industry, where industry is defined by four-digit SIC code. ROE is earnings divided by average stockholders (book) equity and Sales Growth is the growth in sales over the fiscal year before the first bid. Liquidity is the ratio of net liquid assets to total assets, D/E is the long-term debt to book equity, M/B is the ratio of market to book value of stockholders equity, P/E is the ratio of stock price to the earnings for the last fiscal year, and Size is the logarithm of the market value of common stock, all measured at the end of the fiscal year before the first bid. Hostility is a dummy variable where 1 signifies that the target firm resisted an unsolicited offer as determined by SDC. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama–French (1997) industry fixed effects. In addition, several variables that may be only known during the takeover contest are included in the model. Auction equals one if there are multiple bidders, Cash equals one if there is an all-cash payment to target shareholders, Tender offer equals one if the deal is a tender offer. Standard errors are robust to heteroskedasticity. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Variable	Method of Payment		Likelihood of auction		Likelihood of success		Takeover likelihood	
	SB&P	SB	SB&P	SB	SB&P	SB	SB&P	SB
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ATPs	-0.065** (0.031)	-0.060 (0.039)	0.009 (0.026)	0.008 (0.033)	0.020 (0.024)	0.040 (0.030)	-0.014*** (0.004)	-0.009*** (0.003)
Concentration	-0.064 (0.043)	-0.078* (0.042)	0.016 (0.036)	0.007 (0.036)	-0.032 (0.033)	-0.012 (0.033)	0.014 (0.013)	0.012 (0.013)
ATPs*Concentration	0.072* (0.040)	0.117** (0.057)	-0.038 (0.037)	-0.040 (0.048)	0.038 (0.034)	0.018 (0.044)	0.004 (0.009)	0.004 (0.016)
<i>Firm</i>								
Size	0.022*** (0.006)	0.022*** (0.006)	0.010** (0.005)	0.009** (0.005)	-0.013*** (0.004)	-0.013*** (0.004)	-0.013*** (0.001)	-0.015*** (0.001)
Liquidity	0.215*** (0.083)	0.227*** (0.083)	-0.040 (0.070)	-0.039 (0.070)	-0.022 (0.064)	-0.030 (0.064)	-0.015** (0.008)	-0.015* (0.008)
D/E	-0.013 (0.013)	-0.015 (0.013)	0.012 (0.011)	0.012 (0.011)	-0.005 (0.010)	-0.004 (0.010)	0.001 (0.001)	0.001 (0.001)
M/B	-0.008* (0.004)	-0.008* (0.004)	-0.003 (0.004)	-0.003 (0.004)	0.006* (0.003)	0.006* (0.003)	-0.0002 (0.0004)	-0.0001 (0.0004)
P/E	-0.001 (0.001)	-0.001 (0.001)	0.0002 (0.001)	0.0003 (0.001)	-0.0003 (0.001)	-0.0003 (0.001)	-0.0001 (0.0003)	-0.0001 (0.0003)
Sales Growth	-0.041 (0.043)	-0.040 (0.043)	-0.023 (0.036)	-0.023 (0.036)	0.015 (0.033)	0.014 (0.033)	0.003 (0.003)	0.005 (0.004)
ROE	-0.016 (0.075)	-0.013 (0.075)	0.063 (0.063)	0.062 (0.063)	-0.014 (0.058)	-0.009 (0.058)	-0.0001 (0.001)	-0.0003 (0.002)
R ²	16.0%	15.9%	9.4%	9.3%	11.9%	11.8%	25.8%	23.3%
Observations	700	700	700	700	700	700	7389	7389

Table 10: ATPs and Firm Value – Robustness to Alternative Concentration Measures

Panel A reports pooled OLS regressions of the takeover premium (the cumulative abnormal return to the target firms stock for trading days (-63, 126) relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1990-2005. ATPs are measured by SB&P in (1), (3), and (5), and SB in (2), (4), and (6). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. Both indices are from the IRRC dataset. Other controls are as in Table 4, and their coefficients are omitted from the table for brevity, and are available upon request.

Panel B reports pooled OLS regressions of industry-adjusted Tobin's Q on measures of ATPs and concentration. Tobin's Q is the market value of assets over the book value of assets, winsorized at 1% and adjusted for median Tobin's Q in the industry. ATPs are measured by SB&P (in (1) and (4)), *E* (in (2) and (5)), and *G* (in (3) and (6)) indices. SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and is from the IRRC dataset. The *E* index is from Bebchuk, Cohen, and Ferrell (2004), and the *G* index is from Gompers, Ishii, and Metrick (2003). Other controls are as in Table 6, and their coefficients are omitted from the table for brevity, and are available upon request.

In both panels, we check the robustness of our main results from Tables 4 and 6 to using alternative measures of concentration. In (1) and (2), we replace concentration by a dummy variable where 1 signifies that the Herfindahl-Hirschmann Index of industry concentration from the Census bureau is above sample mean. In (3) and (4), we control for import penetration, defined as the ratio of imports to domestic production obtained from the NBER productivity database. In (5) and (6), we replace concentration by a dummy variable where 1 signifies that the number of firms in the industry reported by the Census bureau is above sample mean. Industry is defined by four-digit SIC code. Standard errors are robust to heteroskedasticity and arbitrary serial correlation within industry-year cells. Data is annual for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Panel A: ATPs and Target Premiums

	HHI		Import Penetration		Number of Firms	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	-0.022 (0.031)		-0.059 (0.039)		-0.014 (0.031)	
SB&P*Concentration	0.115*** (0.039)		0.135*** (0.043)		0.149** (0.071)	
SB		-0.041 (0.039)		-0.115** (0.054)		-0.030 (0.034)
SB*Concentration		0.149*** (0.056)		0.214*** (0.072)		0.186** (0.092)
R ²	11.0%	10.9%	14.0%	14.3%	15.5%	13.1%
Observations	656	656	684	684	661	661

Panel B: Valuation Effect of ATPs

Variable	HHI			Import Penetration			Number of Firms		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>ATPs</i>									
SB&P	-0.062*** (0.011)			-0.069*** (0.015)			-0.064*** (0.011)		
Concentration*SB&P	0.077*** (0.030)			0.137*** (0.040)			0.105*** (0.014)		
<i>E</i>		-0.056*** (0.014)			-0.060*** (0.010)			-0.062*** (0.013)	
Concentration* <i>E</i>		0.049*** (0.051)			0.090*** (0.023)			0.054*** (0.014)	
<i>G</i>			-0.046*** (0.012)			-0.024*** (0.006)			-0.074*** (0.011)
Concentration* <i>G</i>			0.037* (0.022)			0.045*** (0.014)			0.081*** (0.020)
R ²	39.3%	39.5%	39.2%	30.4%	30.4%	30.5%	43.4%	43.3%	43.1%
Observations	7504	7504	7504	7219	7219	7219	7800	7800	7800

Table 11: ATPs and Firm Value by Concentration – Robustness to Concentration Cut-Offs

Panel A reports pooled OLS regressions of the takeover premium (the cumulative abnormal return to the target firms stock for trading days (-63, 126) relative to the date of the first bid) for successful and unsuccessful takeover bids for exchange-listed target firms, 1990-2005. ATPs are measured by SB&P in (1), (3), and (5), and SB in (2), (4), and (6). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2 and SB is a dummy variable which equals 1 if the firm has a staggered board. Both indices are from the IRRC dataset. Other controls are as in Table 5, and their coefficients are omitted from the table for brevity, and are available upon request.

Panel B reports pooled OLS regressions of industry-adjusted Tobin's Q on measures of ATPs and concentration. Tobin's Q is the market value of assets over the book value of assets, winsorized at 1% and adjusted for median Tobin's Q in the industry. ATPs are measured by a binary variable where 1 signifies that the firm has high level of antitakeover protection in a given firm year. The binary variable takes the value of 1 if SB&P-index=2 in (1) and (4), if E-index \geq 4 in (2) and (5), and if GIM-index \geq 13 in (3) and (6). SB&P is a governance index based on the sum of the staggered board and poison pill indicators that ranges from 0 to 2, and is from the IRRC dataset. The E index is from Bebchuk, Cohen, and Ferrell (2004), and the G index is from Gompers, Ishii, and Metrick (2003). For all indices, higher index value corresponds to more ATPs. Other controls are as in Table 7, and their coefficients are omitted from the table for brevity, and are available upon request.

In both panels, we check the robustness of our main results from Tables 5 and 7 to using alternative cut-off for defining "Unconcentrated" and "Concentrated" industries: we perform the regressions on subsamples with industry concentration above (below) sample mean. Concentration is defined as the market share of four largest firms in the industry, where industry is defined by four-digit SIC code. Variation across time is controlled for by including year fixed effects, and variation across broad industry classifications is controlled for by including Fama-French (1997) industry fixed effects. Standard errors are robust to heteroskedasticity and arbitrary serial correlation within industry-year cells. Data is for the 1990-2005 period. Levels of significance are indicated by *, **, and *** for 10%, 5%, and 1% respectively.

Panel A: ATPs and Target Premiums

Variable	All		Unconcentrated		Concentrated	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	0.038*		-0.070		0.074***	
	(0.021)		(0.047)		(0.015)	
SB		0.027		-0.104		0.090***
		(0.026)		(0.064)		(0.030)
R ²	13.3%	13.2%	22.1%	22.8%	19.4%	19.3%
Observations	700	700	269	269	431	431

Panel B: Valuation Effect of ATPs

Variable	Unconcentrated			Concentrated		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ATPs</i>						
SB&P	-0.014**			0.033***		
	(0.007)			(0.012)		
E		-0.026***			0.014**	
		(0.005)			(0.005)	
G			-0.005***			0.007***
			(0.001)			(0.002)
R ²	39.5%	39.9%	39.6%	41.9%	41.8%	41.8%
Observations	4522	4522	4522	3129	3129	3129