Public Takeover Bid Resistance: Board Discretion, Antitakeover Provisions, and Initial Bid Premium

Nicholas F. Carline*, Sridhar Gogineni†, and Pradeep K. Yadav‡

Abstract

In this paper, we make three important contributions to the extensive literature on takeover resistance. First, given that both antitakeover provisions (ATPs) and post-bid resistance have the potential to be credible bargaining tools on behalf of shareholders, as well as effective means for the board to remain entrenched, we investigate – through a research design that accounts for endogeneity and sample selection, and thereby facilitates causal inference – the observed effect of the ATPs that the target firm has chosen to keep in place (prior to receiving any bid interest) on the bid-specific takeover resistance by the firm conditional on an actual bid. Second, we investigate, again in a way that facilitates causal inference, the observed effect of the initial public bid premium on the board's resistance decision. Third, we develop a conceptual modeling framework for inferring what these causal relationships, generated using well-documented context-relevant instrumental variables, imply for the broader debate on a crucial broader question: i.e., are U.S. target-firm boards, in deciding to resist a public bid, motivated to act significantly more as bona-fide fiduciaries serving the best interests of shareholders, or more as self-serving entrenchment-focused fiduciaries? This question is particularly important in the U.S. since, in sharp contrast with Britain, Australia, New Zealand, and most E.U. countries, the board of a U.S. takeover target firm has virtually total discretion on whether to offer post-bid resistance; and hence there has long been an extensive debate among legal scholars about the normatively optimal level of board discretion that should exist in this context. Our paper highlights how critical the debate around board discretion and director primacy is for U.S. law and practice relating to public takeover bid resistance.

Keywords: takeover resistance; antitakeover provisions; bid premium; bargaining; entrenchment

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* Department of Finance, Birmingham Business School, University of Birmingham, Birmingham, B15 2TY, U.K. Email: n.carline@bham.ac.uk.

† Department of Finance, John H. Sykes College of Business, University of Tampa, Tampa, FL 33606, U.S. Email: sgogineni@ut.edu.

‡ Corresponding author. Division of Finance, Michael F. Price College of Business, University of Oklahoma, Norman, OK 73019, U.S. Email: pyadav@ou.edu.

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1. Introduction

Targets of takeover bids often take reactive financial or operational actions to resist a public bid. These actions can range from being relatively mild – e.g., releasing financial and strategic information to communicate higher valuations, lobbying relevant stakeholders, and raising antitrust concerns – to more aggressive actions that could even potentially harm firm value – e.g., actions like standstill agreements, litigation, asset or liability restructuring, and targeted repurchases (Ruback, 1987). Based on *Factiva*, boards of 17.4 percent of our twenty-year sample of 995 U.S. target firms offer such 'post-bid resistance'.

This paper makes three important contributions to the extensive literature on takeover resistance. First, we examine the effect of the generic antitakeover provisions (hereafter 'ATPs') that exist in target firms prior to receiving any bid interest on the target board's decision of using post-bid resistance.[1] Our study is the first to do so through an empirical design that accounts for endogeneity and sample selection, and thereby facilitates causal inference. Second, we examine the effect of initial public bid premiums on the target board's decision of using post-bid resistance. Again, we are the first to do so in a way that facilitates causal inference. Third, overarchingly, we develop a conceptual modeling framework to infer what the plausibly causal relationships estimated above imply for the ongoing debate on a broader question: i.e., when target firm boards in the U.S. decide to use post-bid resistance, do they act (significantly) more as *bona fide* fiduciaries serving the best interest of shareholders, or more as self-serving fiduciaries?

This last broader question has important policy implications. From a legal perspective, this is because boards of U.S. takeover target firms have (virtually) complete discretion in deciding whether to use post-bid resistance. In contrast, target boards in the U.K., Australia, New Zealand, and the numerous E.U. countries that have adopted Article 9 of the *E.U. Takeover Directive* are prevented (in varying degrees) from taking any proactive and/or reactive action that could frustrate a public bid, unless that action has been duly considered and approved by shareholders. There has long been a debate amongst legal scholars about the normatively optimal level of target board discretion in this context. In particular, Easterbrook and Fischel (1981) argue for altogether removing board discretion by enacting a 'board neutrality' rule in the U.S.; Bebchuk (2002) makes a case for requiring shareholder approval of board intentions through a less restrictive 'no board veto' rule, whilst Bebchuk (2005) advocates shareholder empowerment more generally, in contrast to board primacy; and Gilson and Schwartz (2021) recommend placing minimal restrictions on board discretion to resist bid interest.

[1] Unlike post-bid resistance, ATPs are intended to impede or deter any public takeover bid, without reference to any specific bid. They can also impede bid interest during negotiations that precede a public offer. Examples of ATPs are classified/staggered boards, supermajority amendments, fair price amendments, and poison pills (see Ruback, 1987).

From an economic perspective, the issue of board discretion and board primacy in the post-bid takeover resistance decision is contentious because board decisions of whether or not to use post-bid resistance can be motivated not just by bargaining to get a better offer for shareholders (Fishman, 1988; Hirshleifer and Titman, 1990), but can also be driven by entrenchment considerations reflecting an inclination to block acceptance of any public bid so as to preserve incumbency and concomitant private benefits of control (Baron, 1983). These conflicting underlying board motivations – good-faith bargaining in stockholder interest vs. self-serving entrenchment considerations – underpin many other theoretical and structural models in the corporate control literature: e.g., Shleifer and Vishny (1986), Stulz (1988), Berkovitch and Khanna (1990), Dimopoulos and Sacchetto (2014), and Levit (2017).

The inherent underlying motivations of the target board – whether to act as a *bona fide* fiduciary for shareholders, or act as an entrenchment motivated self-serving fiduciary – are likely to not just directly influence the board's decision on whether or not to use post-bid takeover resistance, but are also likely to influence the board's decision-making in two (intermediate) ways that, in turn, are each likely to influence the post-bid resistance decision.[2] First, these underlying board motivations arguably influence the ATPs that target firms choose to adopt in their corporate charters and bylaws, and keep in place prior to receiving any bid interest. At the same time, they are also likely to influence whether and how target boards use these ATPs as a bargaining tool in negotiations with a potential public bidder, and hence how their post-bid resistance decisions thereby become dependent on the existence of these ATPs. Second, these underlying board motivations also arguably influence how target boards respond to the premium in an initial public bid (after incorporating any price revision during prior negotiations), and hence, again, how their post-bid resistance decisions thereby become dependent on the quality of an initial public takeover bid.

The two intermediate relationships above – from extant ATPs to the post-bid resistance decision, and from initial public bid premiums to the decision to use post-bid resistance – form the basis of our two main empirical investigations. To our knowledge, ours is the first study of either of these relationships that plausibly circumvents the endogeneity induced by the dependence of each of these variables on the conflicting underlying board motivations discussed above, and hence documents likely causal relationships.

None of the earlier empirical studies on the question of the underlying inherent board motivation behind post-bid takeover resistance have circumvented the endogeneities discussed above, or been based on analyses that are plausibly causal. The overall bottom-line from these studies is also ambiguous. On one hand, Jennings and Mazzeo (1993), Franks and Mayer (1996), Schwert (2000), and Bates and Becher (2017) conclude that post-bid resistance by boards is likely driven by good-faith bargaining for a higher price.

[2] Whether the underlying board motivations are hardwired or triggered (e.g., see Nicholson, 1998) is beyond the scope of this paper. All that matters to our study is that it is important for understanding management behavior and for identifying the necessity to control for it.

These studies typically attach considerable weight to revised and rival bids that are by-products of post-bid resistance decisions and end up benefiting shareholders. On the other hand, several other studies also document evidence that indicates that post-bid resistance by boards is likely driven, at least in part, by entrenchment considerations. In particular: (a) Walkling and Long (1984) and Cotter and Zenner (1994) find that post-bid resistance by boards is more likely if their wealth is more aligned to incumbency and concomitant private benefits of control; (b) Harford (2003) finds that post-bid resistance by boards is more likely if they predict a greater likelihood of loss of incumbency in the event of a successful bid; and (c) Hartzell, Ofek, and Yermack (2004) find that boards sometimes use post-bid resistance to personally benefit from a bid at the expense of shareholders. A major aim of this paper is to contribute to the above debate with conclusions on underlying inherent target board motivation that follow reasonably unambiguously – via the conceptual modeling framework that we develop – from the results of empirically estimating the plausibly causal impact on post-bid resistance of two factors: extant ATPs and initial public bid premium.

Our first empirical investigation relates to the causal relationship from the ATPs of target firms (prior to receiving any bid interest) to their boards' post-bid takeover resistance decisions: in other words, the observed effect of the generic *ex-ante* takeover defenses that the target firm has chosen to keep in place, on the bid-specific *ex-post* takeover defense by the firm conditional on an actual bid. Both defenses have the potential to be credible bargaining tools on behalf of shareholders, as well as effective means for the board to remain entrenched. Extant studies do broadly address the question of whether ATPs, and antitakeover laws, are beneficial for shareholders or more likely to be abused by boards. Straska and Waller (2014) and Karpoff and Wittry (2023) provide a comprehensive review of these studies. Several studies examine whether ATPs serve as a bargaining tool for extracting a higher price during times of bid interest. In particular, Comment and Schwert (1995) and Bates, Becher, and Lemmon (2008) find a positive relationship between bid premiums and existence of poison pills and staggered boards respectively, but without accounting for endogeneity. In addition, Cain, McKeon, and Solomon (2017) rely on passage of antitakeover laws to generate broader and arguably causal support for a positive effect of takeover protection on bid premiums. However, Karpoff, Schonlau, and Wehrly (2017) and Cuñat, Giné, and Guadalupe (2020) also generate evidence that is arguably causal and which suggests that having more ATPs reduces the probability of a takeover, and in the case of the latter study, reduces the benefits to shareholders as well.[3] Notwithstanding the importance of these findings, plausibly causal or otherwise, *none* of these studies address the core question that we ask in this paper in relation to ATPs: *how do ATPs already in*

[3] In another strand of the literature, other studies find support for empire-building when firms have more ATPs (e.g., Masulis, Wang, and Xie, 2007; Harford, Humphery-Jenner, and Powell, 2012) and for risk-reducing value-destroying behavior by boards in the wake of antitakeover laws (e.g., Atanassov, 2013; Gormley and Matsa, 2016), although the latter evidence conflicts with that of Chemmanur and Tian (2018) for ATPs.

place in the target firm specifically affect the boards' post-bid resistance decision? This question is only addressed peripherally by Bates and Becher (2017), who examine just one ATP, the existence of a classified/staggered board, and find an association, not necessarily causal, between that particular ATP and post-bid resistance. In contrast, we rely on well-documented context-relevant instrumental variables to examine the hitherto unexplored causal relationship from different sets of widely used ATPs to post-bid resistance decisions.

Our principal measure for ATPs of target firms prior to receiving any takeover bid interest is the commonly-used Gompers, Ishii, and Metrick (2003) G-index. In addition, we also use the Bebchuk, Cohen, and Ferrell (2009) E-index, which consists of only the six arguably most potent, or publicly sensitive, ATPs out of the twenty-four in the G-index; and also the O-index, which consists of the other eighteen ATPs in the G-index. Karpoff et al. (2017) rely on two history-based instrumental variables for the G-, E-, and O-indices – first solely geography-based and second solely initial public offering-based – but both expunged of industry-related and other sources of endogeneity by constructing the instruments for 'peer' firms many years prior to quantifying the particular firm's current takeover likelihood. They find that having more ATPs is more likely to deter a takeover, but only after accounting for endogeneity. They argue that this is because their instrumental variables filter variation in firms' ATPs due to distinctly relevant factors other than those non-arbitrarily driven by its current takeover likelihood. We rely on similar instrumental variables. First, they are distinct sources of strong (positive) variation in our firms' G-, E-, and O-indices. Second, if they are indeed credibly exogenous to the possibility that a firm adopts or revokes ATPs not only in the absence of any bid interest but also in the immediate expectation of bid interest, then they are also likely to be exogenous to the board's post-bid resistance decision if the public bid does not get deterred. We therefore estimate instrumented effects of G-, E-, and O-indices on post-bid resistance to identify credibly causal relationships from extant ATPs to post-bid resistance decisions.[4]

Our second empirical investigation relates to how initial public bid premiums affect board decisions of whether to use post-bid takeover resistance. Earlier research into this relationship consists mainly of Jennings and Mazzeo (1993) and Bates and Becher (2017). Jennings and Mazzeo (1993) account for endogeneity in this relationship through the use of simultaneous equations, but with no additional means of identification, whilst Bates and Becher (2017) do not account for endogeneity at all because their main focus is on an abnormal component of bid premiums. Given that the bidder's choice of the initial bid price is itself likely to be affected by the likelihood (as assessed by the bidder) of the target board deciding to offer post-bid resistance, we account for the inherent endogeneity through the use of a well-documented context-relevant instrumental variable. Baker, Pan, and Wurgler (2012) argue that the 52-week-high price

[4] Given the findings of Karpoff et al. (2017), we also duly account for endogeneity in the ATPs of our focus firm's preceding their selection as takeover targets. We hence also account for unobservable factors in our sample selection.

serves as a general reference point for a bidder in setting a takeover price. However, the target board's post-bid resistance decision is based instead on full information that includes all relevant private information (Levit, 2017); and hence, the 52-week-high price is unlikely to also serve as a general reference point for the target board's post-bid resistance decision. We rely on the ratio of the pre-run-up price to the 52-week-high price because it is a distinct source of strong (negative) variation in the initial public bid premium, and because it is also likely to credibly filter variation in the initial public bid premium due to distinctly relevant factors other than that non-arbitrarily driven by bidder expectation of post-bid resistance. Coincidentally, Baker et al. (2012) find no material difference in the relationship between this ratio and the bid premium after accounting for the target board's attitude to the bid. We therefore estimate the instrumented effect of initial public bid premiums on post-bid resistance to identify the existence (or absence) of a credibly causal relationship.

What we find from our empirical investigations is as follows. First, we find a positive and statistically significant causal relationship from extant ATPs to the likelihood of post-bid resistance based on the set of the 24 ATPs that are included in the G-index, and also the subset of the 18 ATPs that are included in the O-index, but no significant relationship between extant ATPs and the likelihood of post-bid resistance for the subset of the six ATPs comprising the E-index. The magnitudes of the impacts of the G-index and O-index ATPs are economically very significant. For instance, the effect of the instrumented G-index, after correcting for takeover target selection in the presence of unobservable factors, equates to an average 4.3 percentage points increase in the likelihood of the use of post-bid resistance for each additional ATP in place prior to the target firm receiving any bid interest. Second, and concurrently, we do not find a statistically or economically significant effect of the initial public bid premium on the board decision to use post-bid resistance; and also do not find a significant effect of the ATPs in place prior to the target firm receiving any bid interest on the initial public bid premium.

Our results above remain robust to an extensive battery of robustness checks. In particular, they are robust to the inclusion of a proxy for private information held by an initial public bidder about the value implications of selecting a firm as a takeover target. Specifically, in the theoretical context of Fishman (1988), the effects for ATPs cannot be explained, on average, by greater ATP strength working together with post-bid resistance to overcome an initial bidder's private information advantage. They are also robust to multiple regression specifications, extending to linear-probability instrumental variables regressions, various types of probit instrumental variables regressions, and different construction lags on the instrumental variables for existing ATPs and initial public bid premium. The conclusions are also robust to multiple variable specifications, extending to a summation-based G-index, a threshold-based G-index, different subsets of existing ATPs, and different measures of the quality of the initial public offer.

The conceptual modeling framework that we develop for inferring what these effects imply for target board motive behind post-bid takeover resistance are summarized in Figures 1A, 1B, and 2. Boone and Mulherin (2007) present evidence suggesting that most public bids are preceded by negotiations with potential bidders. These negotiations can generate substantial price revision in the run-up to an initial public takeover bid (Liu and Officer, 2021) and are accordingly integral to our conceptual framework, together with ATPs.[5] Also in line with the extant literature, our conceptual framework also assumes that the underlying inherent board motivation is centered either around good-faith bargaining or around entrenchment considerations. With regard to ATPs, it is the board of a firm that ordinarily decides on whether to adopt, leave in place, or revoke an ATP at any given point in time (Smith, 2019; Cuñat et al., 2020). Our conceptual framework nonetheless also allows for the possibility that external factors – like public perceptions, signaling imperatives, and the views of influential stakeholders (e.g., expressed through shareholder-initiated proposals as in Cuñat et al., 2020) – can, from time to time, condition the general policy of the board in relation to the absence or presence of at least a subset of ATPs, irrespective of the underlying board motivation. We therefore develop our conceptual framework about what to infer from the effects that we find for ATPs by assuming that board policy in normal periods (i.e., periods wherein there is no bid interest in the firm) is to be either proactive or passive in relation to influencing all, or a certain subset, of ATPs. Furthermore, we also allow normal board policy to be different for different subsets of ATPs, again irrespective of the underlying board motivation. For instance, a board could have a normal policy of being relatively passive in relation to the absence or presence of an arguably more potent or publicly sensitive ATP (e.g., a classified/staggered board), but a normal policy at the same time of actively influencing the absence or presence of a less potent or publicly sensitive ATP (e.g., a fair price amendment).

The implications of our conceptual modeling framework are as follows. First, with respect to ATPs already in place in the firm, the empirical evidence should indicate greater preponderance of good-faith bargaining as the underlying board motivation for post-bid resistance only if we find a significant negative relationship from existing ATPs to post-bid resistance. Alternatively, a positive relationship, or the absence of any relationship, will indicate the preponderance of the entrenchment motivation for post-bid takeover resistance. Second, a negative relationship from the initial public bid premium to post-bid resistance will indicate greater preponderance of good-faith bargaining as board motivation for post-bid resistance, whilst the absence of any relationship will show preponderance of an entrenchment motivation. There is no clear inference if the initial public bid premium relates positively to the board decision to resist post-bid.

Hence, the results for <u>both</u> of our empirical investigations – the impact of ATPs already in place in the firm on post-bid resistance, and the impact of initial public bid premium on post-bid resistance – imply

[5] The eventual public form and perception of a bid – merger, tender offer, solicited, and unsolicited – therefore does not matter to our interpretation of the effects that we document.

that, in our twenty-year sample period, the post-bid resistance decisions of target-firm boards are motivated significantly more by entrenchment considerations than by good-faith bargaining for stockholders. Hence, other things being equal, the increase in bargaining power because of having more ATPs in place prior to receiving any bid interest does not reduce the likelihood of post-bid resistance – as would be expected if target boards are motivated primarily by bona-fide considerations – but instead, significantly increases the likelihood of post-bid resistance, which is what would be expected if target boards are motivated by self-serving entrenchment considerations. Similarly, other things being equal, the likelihood of post-bid resistance is not lower for a higher initial public bid premium – as would be expected if target boards are primarily bona-fide fiduciaries – but is unrelated to these bid premia, which is what would be expected if target boards are primarily self-serving fiduciaries.

Notwithstanding the above conclusion, we also find that target boards tend to be relatively proactive (passive) in relation to influencing the status quo of arguably less (more) potent or publicly sensitive ATPs. Both of our empirical investigations, with and without using instrumental variables, also indicate material non-circumvented endogeneities in earlier studies that examine the salient determinants of the post-bid resistance decision. These endogeneities are likely induced through the dependence of those determinants on the underlying inherent board motivations.

Our research design is anchored in accounting for endogeneity and sample selection, thereby facilitating causal inference. We are not the first to conclude that boards of U.S. takeover target firms act significantly more as self-serving fiduciaries than as bona-fide fiduciaries (see, in particular, Cuñat et al., 2020). We are, however, the first to conclude this by directly framing and analyzing the post-bid resistance decision. We draw a similar conclusion also from indirect analyses based on (non-instrumented) effects of the post-bid resistance decision on bid outcome-related variables salient to shareholders.

An important caveat here is that our results reflect the *overall* picture. A significant fraction of boards could well be exercising their discretion diligently by acting as *bona fide* fiduciaries in the best interests of shareholders. We leave the examination of cross-sectional differences across firms, and testing of associated hypotheses, to future research. Irrespective, our results underscore a need to revisit the issue of board discretion and director primacy in relation to takeover resistance in U.S. law and practice.

The rest of the paper is organized as follows. Section 2 develops the conceptual modeling framework for inferring what our empirical investigations imply for board motivations behind post-bid takeover resistance. Section 3 describes the sample, variables, and univariate results. Section 4 discusses the effect of extant ATPs in the target firm (prior to receiving any bid interest) on the post-bid resistance decision. Section 5 documents the effect of the initial public bid premium on the post-bid resistance decision. Section 6 provides non-causal evidence on the effect of post-bid resistance on bid outcome-related variables salient to shareholders. Section 7 summarizes and provides concluding remarks.

2. Ex-Ante Scenarios for Inferring Board Motivation for Post-Bid Resistance

2.1. Conceptual Framework

We do recognize that board motivation for post-bid resistance is not likely to be sharply definable in simple black or white terms, but is likely to be nuanced with multiple shades of grey. However, in order to draw tractable inferences from empirical analyses, we follow extant literature in positing a binary framework in which post-bid resistance by boards is inherently driven either by good-faith bargaining in stockholder interests for a higher price for the firm; or by entrenchment considerations, possibly extending to concomitant private benefits of control in the firm. Theoretical models of post-bid resistance by boards – e.g., Baron (1983), Berkovitch and Khanna (1990), and Levit (2017) – also rely on such a binary framework, as does relevant existing empirical work.[6] Within this binary framework, we develop two sets of *ex-ante* scenarios for inferring the likely main board motivation for post-bid resistance that relate, first, to the ATPs already in place in the firm and, second, to the initial public bid premium for the firm.

2.2. Ex-Ante Scenarios Relating to the ATPs Already in Place in the Firm

Several considerations are relevant in relation to the impact of ATPs already in place in the firm on the board decision to resist post-bid, and therefore integral to our conceptual framework. Figures 1A and 1B present a schematic summary representation of the *ex-ante* scenarios relating to ATPs and implied board motivation for post-bid resistance.

(a) First, we know from Boone and Mulherin (2007) that most takeover bids are preceded by private negotiations of some form with potential public bidders (see also Aktas, de Bodt, and Roll, 2010; and Brown Jr., Liu, and Mulherin, 2022). These private negotiations, which can generate substantial price revisions in the run-up to the initial public takeover bid (Liu and Officer, 2021), occur in the 'pre-bid' (run-up) phase of our conceptual framework, prior to a takeover bid going public at the start of the 'post-bid' phase.[7]

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[6] Berkovitch and Khanna (1990) conclude that post-bid resistance strategies by boards that discriminates against the initial bidder – e.g., standstill agreements, litigation, and asset restructurings – can also create an advantage for a rival bidder, and thus be a credible bargaining tool for extracting a higher price for the benefit of shareholders. However, they also highlight their potential for abuse by boards. The inferences of Berkovitch and Khanna (1990) broaden those of Shleifer and Vishny (1986). Stulz (1988) concludes that even if boards resort to post-bid resistance that harms firm value from the perspective of all bidders, it can likewise ultimately be beneficial for stockholders. In Levit (2017), a threat of post-bid resistance by boards can be beneficial for stockholders. However, this threat can also be abused by boards, since it is only boards that ultimately hold all relevant information about the value of the firm as a takeover target. Finally, in Baron (1983), boards prioritize blocking a successful bid, or otherwise personally benefitting from one, over extraction of a higher price for the firm because of entrenchment considerations.

[7] The 'pre-bid' phase of our conceptual framework allows for both solicited and unsolicited bids (e.g., see Masulis and Simsir, 2018). Our empirical analysis though also accounts for unsolicited bids in the rarer and stricter sense of having by-passed private negotiations (e.g., see Bange and Mazzeo, 2004), which could be the case for instance if the initial public bidder has a significant information advantage over potential rivals.

(b) Second, we know from Comment and Schwert (1995), Bates et al. (2008), and Cain et al. (2017) that ATPs and the presence of antitakeover laws are a credible bargaining tool for boards in extracting a higher price for the firm from a potential bidder. This occurs from the outset of the 'pre-bid' phase of our conceptual framework. We also know from Eldar and Wittry (2021) and Guernsey, Sepe, and Serfling (2022) that ATPs and antitakeover laws can be exploited by boards to preserve shareholder value in the face of crises.

(c) Third, and in contrast, we know from Karpoff et al. (2017) and Cuñat et al. (2020) that ATPs reduce the likelihood that a bid succeeds. If a bid does actually take place then this occurs in the 'post-bid' phase of our conceptual framework. We also know from Masulis et al. (2007), Harford et al. (2012), Atanassov (2013), and Gormley and Matsa (2016), that ATPs and antitakeover laws can be exploited by boards for capitalizing incumbency and private benefits of control in one form or another.

(d) Fourth, and *ceteris paribus*, the inherent underlying perspective of the board – shareholder wealth maximization or entrenchment – should condition the ATPs the firm chooses to keep in place.

(e) Fifth, the same underlying perspective of the board should also condition how the firm's post-bid resistance decision depends on the presence of ATPs; and it is this that we want to ultimately infer.

In this context, we note that it is the board of a firm that ordinarily decides on whether to adopt, leave in place, or revoke an ATP, and that the right of the board to do so is not constrained *de jure* in the U.S. legal system. However, we also allow for the possibility that the board functions *de facto* within an external environment that is governed by influential exogenous external factors – e.g., stakeholder pressures, public perceptions, and signaling imperatives – and these factors may necessitate, from time to time, *independent of the inherent underlying motivation of the board,* general board "policies" about actively influencing or remaining passive in relation to adopting, leaving in place, or revoking specific ATPs or subsets of ATPs.

Accordingly, for our *ex-ante* scenarios, we develop hypotheses about what to expect based on a framework in which the board's "policy" in normal 'no-bid' periods (in which a bid neither exists nor is imminently expected) is the following.[8]

(a) It is proactive in influencing *ex-ante* one specific subset of ATPs.

(b) It is passive with respect to the presence or absence of the remaining subset of ATPs.

(c) Each of these subsets can include all ATPs, or none; in which case, the other subset will be an empty set or will include all ATPs.

(d) We thereby explicitly allow board "policies" to be potentially different for different ATPs.

[8] ATPs are also sometimes adopted after a bid: e.g., 'morning after' poison pills (Heron and Lie, 2006). However, by our definitions of ATPs and post-bid resistance, post-bid adoption of ATPs is classified by us as another form of post-bid resistance by boards.

First, consider the case where the board is inherently motivated by good-faith bargaining in stockholder interest:

(i) If board policy is to proactively influence all or a specific subset of ATPs *ex-ante*, *one* reason it will have more of these ATPs already in place in the firm is that it intends to, and will actually, utilize these ATPs in its pre-bid negotiations with any bidder to secure bid price improvement. Hence, *ceteris paribus*, the board is less likely, on average, to need to use post-bid resistance to strengthen its bargaining position post-bid when it has more existing ATPs overall. If the ATPs of the firm do not change in the immediate expectation of a bid, this implies, on average, a negative relationship between existing ATPs and its decision to resist post-bid.

(ii) If board policy is largely *ex-ante* passive with respect to the presence or absence of some or all ATPs, it will still want to use whatever ATPs the firm happens to have as a bargaining tool for securing bid price improvement. Hence, *ceteris paribus*, if the firm has more of these ATPs, the board will be less likely, on average, to also need to use post-bid resistance for price improvement beyond pre-bid negotiations. Thus, identical to that before, this *ex-ante* scenario also implies, on average, a negative relationship from the ATPs of the firm to post-bid resistance by boards.

Second, alternatively, consider the case of a board inherently motivated by entrenchment considerations:

(i) If board policy is to proactively influence some or all ATPs *ex-ante*, the *only* reason that it will have more ATPs already in place in the firm is because more ATPs generate greater entrenchment value through deterring, blocking, or generating greater personal benefit from a bid. However, if a bid does happen despite these ATPs, the board will be more likely to resist post-bid if it has greater entrenchment propensity. This greater entrenchment propensity will manifest in having relatively more ATPs already in place in the firm. Again, if the ATPs of the firm do not change in the immediate expectation of a bid, this *ex-ante* scenario thus implies a positive relationship from existing ATPs in the firm to post-bid resistance by boards.

(ii) If board policy is largely *ex-ante* passive with respect to the presence or absence of some or all ATPs, any ATPs that happen to be already in place will be unrelated to the actual entrenchment propensity of the board to deter, block, or otherwise personally benefit from a bid. If a bid does happen despite whatever ATPs exist, the board's use of post-bid resistance to secure its entrenchment will depend on its entrenchment propensity, which will be unrelated to existing ATPs. Hence, in this scenario, there will be no relationship between existing ATPs and the decision to resist post-bid.

Accordingly, the bottom-line is that our evidence will dominantly support good-faith bargaining in stockholder interest only if there is a negative relationship between an exogenous measure of existing ATPs

and the decision to use post-bid resistance. A positive relationship, or the absence of any relationship, will represent dominant support for the entrenchment motivation for post-bid takeover resistance.[9]

It is important to underscore that the arguments in the above scenarios also apply *separately* to any subset of ATPs (say, the ATPs included in the E-index) independent of applying *separately* to any other subset of ATPs (say, the ATPs included in the O-index). Consider a board that is conditioned because of exogenous external factors to be passive with respect to one subset of ATPs – say, subset "X" – but is able to proactively influence another different subset of ATPs – say, subset "Y".

(i) If the board is inherently motivated by good-faith bargaining in stockholder interest, the reason it will have more subset "Y" ATPs already in place in the firm is that it intends to, and will actually, utilize these ATPs in its pre-bid negotiations with any bidder to secure bid price improvement. At the same time, the board will still use whatever subset "X" ATPs the firm happens to have as a bargaining tool for extracting price improvement in its pre-bid negotiations. Either way, if the firm has more of either subset of ATPs, boards will be less likely, on average, to need to also use post-bid resistance for extracting a higher price for the firm, implying, on average, a negative relationship from either subset of ATPs separately to post-bid resistance.

(ii) Similarly, if the board is inherently motivated by entrenchment considerations, a board with greater entrenchment propensity will also have more subset "Y" ATPs already adopted in the firm to remain entrenched. At the same time, the greater the entrenchment propensity of the board, the more likely the board will be to mount post-bid resistance, if a bid happens. Hence, we should observe a positive impact on post-bid resistance from the existing subset "Y" ATPs. At the same time, the board that is inherently motivated by entrenchment considerations will also resist post-bid irrespective of the number of subset "X" ATPs that happen to already be in place, implying that we should also observe no impact on post-bid resistance from subset "X" ATPs already in place in the firm.

2.3. Ex-Ante Scenarios Relating to the Initial Public Bid Premium for the Firm

If boards are inherently motivated by good-faith bargaining in stockholder interest, their decision of whether or not to use post-bid resistance will depend on the bid premium at the start of the 'post-bid'/public phase of our conceptual framework, since it is that which determines the potential for post-bid

[9] As discussed in Section 3, we exploit well-documented instrumental variables for extant ATPs, and for the initial public bid premium, that are relevant and plausibly exogenous in the specific context of our study. In addition, we control for many other conceivable determinants of post-bid resistance by boards, including the likely amount of private information held by the initial bidder prior to making a bid, since an implication of the broader theoretical model of Fishman (1988) is that post-bid resistance by boards can play a role in narrowing initial bidder advantage over rival bidders. Notwithstanding that this may be especially pertinent for takeover bids that occur unexpectedly from a public perspective, our results cannot be explained, on average, by greater ATP strength working alongside post-bid resistance to overcome an initial bidder's private information advantage.

resistance to secure price improvement beyond the initial public bid price for the firm (Fishman, 1988; Hirshleifer and Titman, 1990; and Dimopoulos and Sacchetto, 2014). Hence, *ceteris paribus* (inclusive of the pre-determined ATPs of the firm), the lower the initial public bid premium, the more likely, on average, will be a need for the board to use post-bid resistance. This *ex-ante* scenario thus implies, on average, a negative relationship from the initial public bid premium to post-bid resistance by target boards.

Alternatively, if boards are inherently motivated by entrenchment considerations, they will prioritize those entrenchment considerations irrespective of the initial public bid premium. Hence, the board decision of whether to use post-bid resistance will be based on its entrenchment propensity and remain essentially unaffected by the initial public bid premium. Thus, in contrast to that before, this *ex-ante* scenario implies no relationship from the initial public bid premium for the firm to post-bid resistance by boards.

Accordingly, a negative relationship between an exogenous measure of initial public bid premium and the decision to use post-bid resistance will represent dominant support for the good-faith bargaining view of post-bid takeover resistance, whilst the absence of any relationship will represent dominant support for the entrenchment motivation for post-bid takeover resistance. Also, there will be no clear inference if the initial public bid premium relates positively to the board decision to resist post-bid.

Figure 2 presents a schematic summary representation of these *ex-ante* scenarios relating to the initial public bid premium for the firm and implied board motivation for post-bid resistance.

3. Sample, Variables, and Univariate Results

3.1. Sample

Our sample is at the intersection of the RiskMetrics dataset for the component Gompers et al. (2003) G-index data and Center for Research in Security Prices and Compustat Merged (CCM) database for other firm data. We construct an unbalanced panel of U.S.-incorporated firms for the period 1990-2011. Since dual class stock and antitrust authorities could potentially impede a firm's selection as a takeover target regardless of a proven deterrent effect of having more ATPs already in place, we remove observations for which the firm is flagged in RiskMetrics as having dual class common stock or coded in the CCM database as having primary operations in the financial or utility sectors. Our sample contains 21,375 observations for the period 1992 to 2011. For 995 of these observations, the firm is selected as a takeover target the following year. Henceforth, we refer to our sample period as being from 1993 to 2012. The RiskMetrics dataset covers the period 1990-2006. However, we begin our sample period in 1993 to construct the instrumental variables for the G-index at least three years before ascertaining takeover target selection for a firm each year. In addition, we end our sample period in 2012 as a compromise between requiring a longer

forward fill of the component G-index data for 2006 than for earlier data points, and cutting off fewer more recent years, when according to Cain et al. (2017), bid hostility is still an important phenomenon.[10]

We utilize the Securities Data Company (SDC) database for ascertaining takeover target selection for a firm each year. We require a bid to be an attempt to acquire common stock of more than fifty percent and disclose an offer price. Despite the criteria, some firms are selected as a takeover target multiple times in reasonably quick succession. Consistent with Bates and Becher (2017), we therefore merge into a single bid multiple attempts to acquire a firm when the separation is no more than one year, but then do not count bids beginning before our sample period.[11] We also do not count bids that are, or involve, an attempt by managers to acquire the firm, because a management buyout could impede a firm from becoming a takeover target regardless of a proven deterrent effect of existing ATPs. We depend entirely on news sources from the Factiva database for ascertaining the decision to use post-bid resistance because Bates and Becher (2017) raise concerns about the criteria that the SDC database applies to flag resistance. For general consistency with the criteria applied by them and in most other empirical research, as well as consistency with the spirit of the theoretical models of Berkovitch and Khanna (1990) and Levit (2017) for all types of resistance, we search for a board decision to use any form of post-bid resistance. Resistance ranges from merely recommending rejection of the initial offer to, at the extreme, deploying, or threatening to deploy, a defense discriminating against at least the initial bidder. However, we also search for the decision by boards to adopt any post-bid ATP, one of the most common types of which is a 'morning after' poison pill (see, in particular, Heron and Lie, 2006). In addition, our searchable timeframe extends from the first public announcement of a bid (i.e., from the start of the 'post-bid' phase of our conceptual framework) to the very end of a bid, in the context of having merged some multiple attempts to acquire a firm. Consistent with Jennings and Mazzeo (1993), Schwert (2000) and Bates and Becher (2017), and because of the 'pre-bid' private negotiation run-up phase of our conceptual framework, the eventual public form and perception of a takeover bid – i.e., merger, tender offer, solicited, and unsolicited – does not matter to our categorization of the use of post-bid resistance. Uniquely, however, we account for takeover bids that occur unexpectedly from a public perspective, by later controlling for the likely amount of private information already held by the initial bidder.

Columns (1), (2), and (3) in Table 2 present, respectively: frequency distributions for all observations; observations for which the firm is selected as a takeover target; and takeover targets that use

[10] Diagnostic tests that reject the null hypothesis that G-index is sufficiently exogenous to the decision to use post-bid resistance (as to require not being instrumented) become statistically more significant if we end our sample period in 2009, which leaves the forward fill of component G-index data for 2006 compatible with earlier data.

[11] The criteria still leave a few firms selected as a takeover target multiple time. We count each time to present the results in the paper and Internet Appendix. Nonetheless, dropping all observations for the firms after the first time does not materially alter our results.

post-bid resistance. Columns (4) and (5) present rates of takeover target selection and the use of post-bid resistance, respectively. Column (4) in Table 2 shows that firms selected as takeover targets are 4.7 percent of the overall observations across the sample period. Column (5) in Table 2 shows that overall 17.4 percent, i.e., 173, of the takeover targets use post-bid resistance. The overall rate in Column (4) is compatible with the rate of takeover target selection documented by Karpoff et al. (2017) for a comparable sample. However, the overall rate in Column (5) is much higher than the rate of the use of post-bid resistance documented by Bates and Becher (2017) for a comparable sample period, albeit a non-comparable sample of takeover targets. We surmise that the difference is partially attributable to their sample not being restricted to takeover targets with coverage in the RiskMetrics dataset because the component G-index data is generally for larger firms. Indeed, Schwert (2000) and Bates and Becher (2017) themselves find that boards of larger takeover targets are more likely to use post-bid resistance. Another likely reason though is that they only depend on news sources for a select group of takeover targets in their sample. Indeed, Jennings and Mazzeo (1993) search news sources for all takeover targets in their sample and document a rate of use of post-bid resistance that is higher than in our data, albeit for a non-comparable timeframe. In Columns (4) and (5), years with a higher rate of takeover target selection, particularly the takeover waves of 1997-2000 and 2005-2007, tend to be years with a lower rate of the use of post-bid resistance.

3.2. Variables and Univariate Results

Our analysis integrates variables for firm and bid features that are standard to the literature on the market for corporate control, as framed by Jensen and Ruback (1983). The variables are described in Table 1, as are the instrumental variables of interest to our analysis, namely the G-index and initial premium, respectively. The instrumental variables for the G-index, following Karpoff et al. (2017), are the IPO-cohort based IPO-peers G-index and the geography-cohort based HQ-peers G-index. The instrumental variable for the initial premium, following Baker et al. (2012), is the pre-run-up price to the 52-week-high price. These instrumental variables are for circumventing econometrically for endogeneity. We discussed them briefly in Section 1 and will be discussing them in more detail below, with Table 1 providing formal detailed definitions.

The G-index and the initial premium are our hypothesized drivers of the decision to use post-bid resistance. Table 3 presents descriptive statistics for these hypothesized drivers, and for other firm and bid features as additional explanatory variables, after grouping takeover targets based on whether their boards decided to use post-bid resistance. Columns (1)-(3) and Columns (4)-(6) present the mean values, standard deviations, and number of observations for each of these variables for each group. Column (1) additionally flags the statistical significance of differences in the mean values for takeover targets that do and do not use post-bid resistance.

3.2.1. Firm Features

The G-index is our main measure of ATPs already in place before a firm's selection as a takeover target. A larger number of existing ATPs, which for the G-index can be a number as large as twenty-four after adding one for each counted ATP, equates to the board having a more effective set of mechanisms for achieving its objectives, be these to do with bargaining for price improvement in stockholder interest or with its entrenchment. According to the ex-ante scenarios in Figures 1A and 1B, if bargaining for price improvement in stockholder interest is the main board motive driving the decision to use post-bid resistance, we would expect to find a smaller G-index, on average, for takeover targets that use post-bid resistance relative to those that do not. On the other hand, if board motive is mainly entrenchment related, we would expect to find a G-index that is larger or no smaller, on average, for targets using post-bid resistance, relative to those that do not. The G-index averages, respectively, 9.376 and 8.878 for takeover targets that use and do not use post-bid resistance. The difference in the means is positive and statistically significant at the five percent level, which is therefore consistent with entrenchment likely being the main board motive for post-bid resistance. However, this result could reflect a mere association between the G-index and the decision to use post-bid resistance when what really matters is whether the G-index has a plausible causal influence on post-bid resistance.

As a partial assessment of likely influence, we examine differences in the means for the instrumental variables for the G-index, namely IPO-peers G-index and HQ-peers G-index.[12] For our inferences to be plausibly causal, each instrumental variable should be a source of variation in the G-index that is plausibly exogenous to takeover target selection for a firm each year. These are similar instrumental variables to those of Karpoff et al. (2017), and they theoretically duly scrutinize these conditions. Their rationale is as follows. Each instrumental variable is restricted to a group of peers for the firm. Endogeneity induced from industry takeover waves is removed by only including peers from sectors not shared with the firm. Any remaining endogeneity is removed by summing the adoption rates for the individual ATPs counted in the G-index for a group of peers at a point in time many years before the takeover year, and by ensuring that each group of peers has a distinct connection to the firm related to the past adoption of ATPs. For the IPO-peers G-index, the connection relates to time in that the firm and its peers experienced the same legal environment for the adoption of ATPs because of sharing the same year of the initial public offering (IPO). For HQ-peers G-index, the connection relates to geography in that the firm and its peers are likely to have received similar legal advice on the adoption of ATPs because of sharing the same state

[12] In satisfaction of the exclusion condition, an instrumental variable should be plausibly exogenous to the outcome variable, which means that, in satisfaction of the relevance condition, it should not affect the outcome variable in a way other than as being a source of variation in the suspect endogenous variable. However, Angrist and Pischke (2009, p. 213) also emphasize that an association from the instrumented variable to the outcome variable would be dubious should it not possible to detect a matching indirect effect of the instrumental variable on the outcome variable.

headquarters (HQ). Hence, IPO-peers G-index and HQ-peers G-index filter only those historic parts of the G-index of the firm due to distinctly relevant factors unrelated to current takeover target likelihood for the firm and, hence, to the board's decision to offer post-bid resistance in the event of any bid. These instrumental variables therefore plausibly allay concerns, otherwise, around boards adopting or revoking ATPs in expectation of a bid and around the adoption or revocation of ATPs changing as the likelihood of a bid changes over time. They also allay concerns around boards having the option to adopt a poison pill at very short notice relative to a bid (e.g., see Coates, 2000).

We therefore expect IPO-peers G-index and HQ-peers G-index to be positively associated with the G-index. As a testament to the distinctness of the instrumental variables, we observe that the positive correlation between IPO-peers G-index and HQ-peers G-index, for observations corresponding to the firms being selected as a takeover target, is only 12.3 percent. IPO-peers G-index and HQ-peers G-index average 9.115 and 9.082 respectively for takeover targets that use post-bid resistance, and 8.787 and 8.927 for those that do not. The differences in the means are positive and statistically significant in each case to at least the ten percent level. This therefore suggests early support for the positive association between the G-index and the decision to use post-bid resistance as being one whereby the G-index is likely causally influences post-bid resistance.

Consistent with Schwert (2000), few of the other firm features are different at conventional levels of statistical significance between takeover targets that do and do not use post-bid resistance. However, in contrast to what he finds, our results show that size is no larger on average for takeover targets that use post-bid resistance. We, again, surmise that the difference is mainly attributable to his sample, like the sample of Bates and Becher (2017), containing a larger number of smaller firms because of not being restricted to takeover targets with coverage in the RiskMetrics dataset.

3.2.2. Bid Features

The initial premium is our main measure of the quality of the initial public offer. Arguably, a higher initial premium, or a larger proportionate difference between the initial bid price and the pre-run-up price of the takeover target, equates to boards having less bargaining potential for price improvement post-bid. According to the ex-ante scenarios in Figure 2, if bargaining for price improvement in stockholder interest (entrenchment) is in the main the board motive driving the decision to use post-bid resistance, we would expect to find a lower (no lower) initial premium, on average, for takeover targets that use post-bid resistance, relative to those that do not. The initial premium averages 34.0 (42.4) percent for takeover targets that use (do not use) post-bid resistance. The difference in the means is negative and statistically significant at the one percent level, which therefore suggests that bargaining for price improvement is likely the main driver behind the decision to use post-bid resistance. Although this is consistent with the conclusion of

Jennings and Mazzeo (1993), it could well be documenting just a mere association between the initial premium and the decision to use post-bid resistance.

As a partial assessment of whether the initial premium is likely to causally influence the decision to use post-bid resistance, we again examine the difference in the means for the instrumental variable for the initial premium, namely pre-run-up price to 52-week-high price. For our inference to be plausibly causal, the instrumental variable should be a source of variation in the initial premium that is exogenous to the decision to use post-bid resistance. This instrumental variable is based on Baker et al. (2012), who theoretically scrutinize the relevance condition. Their rationale is that because the instrumental variable equates to the proportionate difference between the pre-run-up price and the preceding fifty-two-week high price of the takeover target, the preceding price serves as a reference point for the initial bidder in setting the initial offer price. We therefore expect pre-run-up price to 52-week-high price to be negatively associated with the initial premium.

Baker et al. (2012) go on to rationalize that the pre-run-up price to 52-week-high price is exploitable for examining whether there is a negative association from the initial premium to the announcement return to the initial bidder – as a way of cleanly assessing overpayment. We rationalize that the pre-run-up price to the 52-week-high price is also exogenous to the decision to use post-bid resistance, since the preceding fifty-two-week high price is a generic reference point for the initial premium and thus filters only that part of the initial premium for the firm due to a distinctly relevant factor unrelated to bidder expectation of post-bid resistance by boards. In addition, it is unlikely to reflect private information held by the initial bidder and boards about the value of selecting the firm as a takeover target.[13] This instrumental variable therefore plausibly allays concerns, otherwise, around bidders bringing their best public offer to the target after adjusting the bid premium *ex-ante* to avoid post-bid resistance. Pre-run-up price to 52-week-high price averages -24.4 percent for takeover targets that use post-bid resistance, and -24.5 percent for those that do not. The difference in the means is not statistically significant at conventional levels, which therefore suggests early on that the negative association between the initial premium and the decision to use post-bid resistance is unlikely to be one whereby the initial premium is likely to influence post-bid resistance.

The other bid feature, namely a cash offer, is also different at a conventional level of statistical significance between takeover targets that do and do not use post-bid resistance. The use of only cash as the intended method of payment by the initial bidder is more frequent for takeover targets that use post-bid resistance. This result accords with the inferences of Malmendier, Opp, and Saidi (2016), who infer that the

[13] From a purely empirical standpoint, Baker et al. (2012) find no significant difference in the relationship between the 52-week-high-price ratio and the initial premium when they also consider the target board's attitude to a bid (see Table 6 in their paper).

intended method of payment tends to comprise more cash when the initial bidder wants to send a signal that the takeover target is undervalued.

4. Multivariate Results for G-index and the Post-Bid Resistance Decision

We next draw on a series of regressions to examine the effect of the G-index on the decision to use post-bid resistance. We start by only accounting for the effect of our other hypothesized driver of the decision to use post-bid resistance – the initial premium – as well as for the effects of the other firm and bid features, and for industry and year effects. We then additionally account for private information held by the initial bidder about the value of selecting the firm as a takeover target, via correcting for takeover target selection in the presence of unobservable factors. We finish this section with a battery of additional robustness checks.

We model the decision to use post-bid resistance as a limited dependent variable that equals one (zero) for takeover targets that use (do not use) post-bid resistance. However, the results in Tables 4 and 5, and in the main elsewhere, are from linear probability regressions to enable us to evaluate a comprehensive set of diagnostic test results related to examining the effect of instrumenting for the G-index. Nonetheless, we get near identical results from (probit) regressions specifically intended for a limited dependent variable.[14]

4.1. Effect of Instrumenting for the G-index

We draw on an ordinary least squares (OLS) regression to examine the effect of the non-instrumented G-index on the decision to use post-bid resistance. The results are presented in Column (1) of Table 4. The coefficient on the G-index is not statistically significant at conventional levels, which is therefore inconsistent with the univariate results – for G-index, IPO-peers G-index and HQ-peers G-index – that are collectively suggestive of a positive association from the G-index to the decision to use post-bid resistance. Collinearity between the G-index and the initial premium and other firm and bid features could account for the difference. However, regardless of how significant a role collinearity plays, and despite what is collectively suggested by the univariate results, there are compelling reasons to suspect that the G-index, as it stands, is not sufficiently exogenous to the decision to use post-bid resistance. For instance, without exploiting the instrumental variables that provided the most reliable evidence from the univariate results, reverse causality could engender an unreliable association from the G-index to the decision to use post-bid resistance because a firm could have adopted (revoked) an ATP to signal more (less) intransigence in expectation of being selected as a takeover target.

[14] Parallel results for Tables 4 and 5 are presented in Tables IA.1 and IA.2, respectively, in the Internet Appendix.

We therefore draw on a two stage least squares (2SLS) regression to examine the effect of instrumenting for the G-index on the decision to use post-bid resistance.[15] We jointly exploit the instrumental variables because IPO-peers G-index and HQ peers G-index are distinct, plausibly exogenous sources of variation in the G-index. The first stage results for instrumenting the G-index and second stage results for the effect of instrumenting for the G-index are presented in Columns (2) and (3), respectively, of Table 4. The coefficient on the G-index is positive, statistically significant at the one percent level, and equates to an average 5.9 percentage points increase in the likelihood of the use of post-bid resistance for each additional ATP already in place before a firm's selection as a takeover target. The effect is also economically materially significant given the overall high rate of the use of post-bid resistance for our sample.

The comprehensive set of diagnostic test results related to the effect of instrumenting for the G-index are also presented in Table 4. The F-statistic for IPO-peers G-index and HQ-peers G-index is from the first stage test of the null hypothesis that the instrumental variables alone have no joint effect on the G-index that is statistically significant at conventional levels. The value of 38.4 exceeds the five percent of worst-case bias robust critical value of 13.9 recommended by Olea and Pflueger (2013). We therefore have confidence in rejecting the null hypothesis, knowing also that the coefficients on IPO-peers G-index and HQ-peers G-index are both positive and statistically significant to at least the five percent level. The R^2-statistic for IPO-peers G-index and HQ-peers G-index is the first stage measure of the overall variation in the G-index explained by the joint variation in the instrumental variables alone. Despite there being no recommended critical value, the value of 7.8 percent is sizable considering the historic rationale for the instrumental variables having theoretical validity as sources of variation in the G-index. The results therefore suggest that the instrumental variables also have statistical validity as sources of variation in the G-index.

Since we jointly exploit the instrumental variables, the Chi^2-statistic for no over-identification is from the second stage test of the null hypothesis that at least one of the instrumental variables is likely to be exogenous to the decision to use post-bid resistance. The value of 0.1 is not statistically significant at conventional levels. We therefore have confidence in accepting the null hypothesis, which gives us reassurance that the instrumental variables have not only theoretical validity but also statistical validity as exogenous sources of variation in the G-index. The remaining result is the Chi^2-statistic for exogeneity from the second stage test of the null hypothesis that the G-index is likely to be sufficiently exogenous to the decision to use post-bid resistance as to not require instrumenting. The value of 8.8 is statistically significant

[15] We get near identical results from alternative specifications in which we use limited information maximum likelihood and generalized method of moments regressions specifically intended for examining the effect of instrumenting for a suspect endogenous variable on an outcome variable.

at the one percent level, which therefore gives us confidence in rejecting the null hypothesis. In view of the concerns highlighted by Roberts and Whited (2013) and Jiang (2017), we also rely on a conditional likelihood ratio (CLR) test, proposed by Moreira (2003), for obtaining a distribution of the instrumented effect of the G-index. This simulation-based test relies on 10,000 draws from our sample and, crucially, does not depend on the strength of the first stage. The CLR test statistic has a value of 11.0 and is significant at the one percent level. The corresponding ninety five percent confidence interval of 2.5 to 10.0 percentage points is positive throughout and, importantly also, does not overlap that from our OLS regression. We later also provide one possible explanation for the downward bias in our OLS result.

The first stage coefficients on size and the return on assets show that these other firm features correlate positively and negatively, respectively, with the G-index. The result for size suggests that being at the helm of a larger takeover target does not substitute for a greater set of ATPs already in place in the firm. The positive collinearity runs contrary to Schwert (2000), who posits that a larger takeover target equates to boards having an already effective mechanism for bargaining for price improvement. However, consistent with the univariate results, the second stage coefficients on size and the return on assets are not statistically significant at conventional levels.

Angrist and Pischke (2009, p. 213) emphasize that it would be dubious for any causal association not to be traceable in the reduced form, in the sense of it not being possible to detect a matching indirect effect of the instrumental variable on the outcome variable. The reduced form results for the effect of instrumenting for the G-index are presented in Column (4) of Table 4. The coefficients on IPO-peers G-index and HQ-peers G-index are positive, quite close in magnitude, and statistically significant at the one percent level for the first instrumental variable. In view of all the above, we at this stage conclude that there is a positive causal association from the G-index to the decision to use post-bid resistance.

4.2. Effect of Private Information Held by the Initial Bidder

So far, we infer a positive causal relationship running from ATPs already in place before a firm's selection as a takeover target to the decision to use post-bid resistance. According to the ex-ante scenarios in Figures 1A and 1B, the positive relationship is contrary not only to the bargaining for price improvement in stockholder interest view for specifically explaining the dominant motive behind the decision to use post-bid resistance, but also to an often espoused positive association between ATPs already in place in the firm and bargaining in stockholder interest more broadly (see, in particular, Comment and Schwert, 1995; Bates et al., 2008; and Cain et al., 2017).

However, there could be a scenario in which a greater set of ATPs already in place is made less effective for this purpose because the initial bidder holds more private information about the value of selecting the firm as a takeover target. In this scenario, which may be especially pertinent to takeover bids

that occur unexpectedly from a public perspective, the target board could be more likely to need to use post-bid resistance to strengthen its bargaining position. Fishman (1988) shows theoretically that private information before selecting a firm as a takeover target gives the initial bidder an advantage over a potential rival, but that the decision to use post-bid resistance can serve to make public the private information and therefore narrow the advantage. His modeling therefore predicts a positive association between private information held by the initial bidder and the decision to use post-bid resistance. For our analysis, the main issue then becomes to what extent the positive relationship from the G-index to the decision to use post-bid resistance manifests from the omission of any positive collinearity between an exogenous estimate of private information held by the initial bidder and the instrumented G-index.

To address the issue, we exploit the inverse Mills ratio (IMR) for takeover target selection in the presence of unobservable factors as an exogenous estimate of private information held by the initial bidder. We model takeover target selection as a limited dependent variable that equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables are the firm features, and industry and year controls. However, Karpoff et al. (2017) suggest that reverse causality muddles the true association from the G-index to takeover target selection. We therefore account for the effect of instrumenting for the G-index, although in the reduced form because of the confines of a probit regression, to enable us to exploit the IMR.[16] We then add the IMR to the same 2SLS regression, which requires a correction to the standard errors. Wooldridge (2010, pp. 809-813) emphasizes that this procedure is the correct way to treat a suspect endogenous variable warranting inclusion in not only the outcome stage but also the selection stage of a model.

However, to be beyond reasonable doubt that the IMR is exogenous, we exploit a source of variation in takeover target selection that is plausibly exogenous to the decision to use post-bid resistance. This source of variation is a dummy variable that equals one (zero) for firms incorporated (not incorporated) in California. Our rationale is that all other things equal, California incorporation makes a firm more susceptible to selection as a takeover target because of a long history of legal hostility to ATPs in the state (see, in particular, Catan and Kahan, 2016; and Amihud, Schmid, and Solomon, 2017). At the same time, and as emphasized by Catan and Kahan (2016), most re-incorporations coincided with the peak in the passage of state takeover laws in the second half of the 1980s, and therefore many years before firms in our sample make the decision to use post-bid resistance.

The results from the probit regression for takeover target selection, and for exploiting the IMR, are presented in Column (1) of Table 5. The average marginal effect of California incorporation is, indeed,

[16] This also serves to circumvent situations in which boards endogenously match to firms because of the presence or absence of ATPs and their inherent propensity for wanting to deter a takeover bid.

positive and statistically significant (at the one percent level).[17] In contrast, the average marginal effects of IPO-peers G-index and HQ-peers G-index are negative and statistically significant (to at least the five percent level).[18] The reduced form results for the effect of instrumenting for the G-index suggest that a larger G-index is more likely to impede a firm from selection as a takeover target, which is consistent with Karpoff et al. (2017).

The first and second stage results from the 2SLS regression for the decision to use post-bid resistance, after adding the IMR, are presented in Columns (2) and (3), respectively, of Table 5. The first stage coefficient on the IMR is positive and statistically significant (at the five percent level). This result suggests that more (less) private information held by the initial bidder is associated with a larger (smaller) G-index, which is possibly because of the adoption (revocation) of an ATP to signal more (less) intransigence in expectation of selection as a takeover target.[19] The second stage coefficient on the IMR is also positive and statistically significant (at the ten percent level). This result suggests that the decision to use post-bid resistance is more likely in response to more private information held by the initial bidder, which therefore accords with the theoretical prediction of Fishman (1988).

Nonetheless, our main results continue to indicate that there is a positive relationship from the G-index to the decision to use post-bid resistance, although with a slight reduction in its average effect, suggesting that for some takeover bids, but by no means an average bid, private information held by an initial bidder before selecting a firm as a takeover target renders ATPs less effective than would otherwise be the case, making it more likely for the board to need to use post-bid resistance to strengthen the firm's bargaining position. The same is true of the reduced form results presented in Column (4) of Table 5.

4.3. Additional Robustness Checks for the G-index

After correcting for takeover target selection in the presence of unobservable factors, we continue to infer that, for an average bid, a greater set of ATPs already in place before a firm's selection as a takeover

[17] Many firms in our sample are incorporated in Delaware. Nonetheless, jointly accounting for this fact does not materially alter our results, and the average marginal effect of Delaware incorporation is itself not statistically significant at conventional levels.

[18] Amihud et al. (2017) expect, and find, that California incorporation is negatively associated with a classified/staggered board. However, whilst a classified/staggered board is counted in the instrumental variables for the G-index, we find no material negative collinearity between California incorporation and IPO-peers G-index or HQ-peers G-index (maximum correlation coefficient = -11.9 percent).

[19] Data collected by Smith (2019), as recent as after the passage of the Sarbanes Oxley Act of 2002, shows that the adoption and revocation of an ATP are both rather frequent, but that revocation is more frequent. Despite the general stickiness of ATPs through time, data collected by Cuñat et al. (2020), for a timeframe covering most of our sample period, also shows that revocation is frequent. Moreover, they find evidence to suggest that passage of a shareholder proposal to revoke an ATP causes less board intransigence, as indicated by a greater subsequent likelihood of the firm being taken over. This may therefore provide one explanation for the downward bias in our OLS result as compared to that from our 2SLS regression.

target gives more impetus to the decision to use post-bid resistance. The positive relationship is consistent not only with a dominant entrenchment motivation for specifically explaining the decision to use post-bid resistance, but also with an often-espoused positive association between ATPs already in place in the firm and entrenchment in other contexts (e.g., see Masulis et al., 2007; Harford et al., 2012; Gormley and Matsa, 2016; Karpoff et al., 2017; and Cuñat et al., 2020). However, in this sub-section, we undertake additional robustness checks to examine whether our main result holds when the instrumental variables for the G-index are constructed even further back in time, and for an alternative functional form of the G-index.

4.3.1. Alternative Time Horizon for the G-index Instrumental Variables

In our earlier analysis, we construct the instrumental variables for the G-index three years before ascertaining takeover target selection for a firm each year. We therefore first aim a robustness check at the sufficiency of this rationale in part satisfaction of the second stage exclusion condition. We do so by replacing the rolling instrumental variables with equivalent variables constructed from the earliest available component G-index data, which is at the beginning of the RiskMetrics dataset for most firms. We do not expect the fixed instrumental variables, namely IPO-peers G-index (fixed) and HQ-peers G-index (fixed), to not meet the first stage relevance condition because ATPs are generally sticky through time and firms seldom relocate headquarters (in the context of the HQ-peers G-index). Since we exploit new instrumental variables for the G-index, preceding the 2SLS regression is a new probit regression for exploiting the IMR, the results from which are presented in Column (1) of Table IA.3 in the Internet Appendix. The first stage, second stage, and reduced form results are presented in Columns (2), (3), and (4), respectively, of Table IA.3. Despite these changes, our main results and inferences stay the same.

4.3.2. Alternative Functional Form for the G-index

Gompers et al. (2003) conceive the G-index by assuming that the counted ATPs sum up, in units of one, to create an overall set of ATPs already in place in the firm. We therefore next aim a robustness check at the reliability of a summation-based measure of ATPs in capturing the collective power of existing ATPs. We accordingly replace the G-index with a dummy variable that equals one (zero) for firms each year with a G-index in excess (not in excess) of the median G-index for all firms in that year. However, for the G-index dummy, we once again exploit the rolling instrumental variables, which means that the probit regression for exploiting the IMR is as in Column (1) of Table 5. We also replace the 2SLS regression with a two-equation probit regression because now not only the outcome variable but also the suspect endogenous variable is a limited dependent variable. Since estimation of the two-equation probit regression is via a system of simultaneous equations and therefore automatically accounts for any correlation between the error terms, an advantage over the 2SLS regression is that the estimation process is somewhat less

reliant on the validity of the instrumental variables. Columns (1) and (2) in Table IA.4 in the Internet Appendix present in full the first equation results for instrumenting the G-index dummy and the second equation results for the effect of instrumenting for the G-index dummy on the decision to use post-bid resistance, respectively. The equations are therefore akin to the first and second stages of the 2SLS regression. Column (1) in Table 6 presents abridged second equation results. Despite these changes, our main results, whilst limited in the diagnostic test sense because of the nature of the new estimation process, continue to indicate that there is a positive relationship from ATPs already in place in the firm to the decision to use post-bid resistance.

4.4. The E-index and the O-index as Subsets of the G-index

Bebchuk et al. (2009) make a case for an E-index – with just six out of the twenty-four ATPs counted in the G-index – as having the most potency for entrenchment. These six include a classified/staggered board, a supermajority amendment, and a poison pill. Their case relies on legal argument, as well as on evidence that only a higher E-index, not a higher index comprised of the other eighteen ATPs in the G-index, is harmful to stockholder value and returns, in the broadest possible sense. However, after correcting for endogeneity in existing ATPs, Karpoff et al. (2017) find evidence to suggest that a higher index comprised of the other eighteen ATPs is as statistically significant as a higher E-index in outright deterring a takeover bid.

We therefore next aim a robustness check at the reliability of a broad-based measure of existing ATPs for inferring entrenchment in the more specific context of the post-bid resistance decision. To do so, we revert to a summation-based G-index and replace it and the rolling instrumental variables with an index, namely O-index, and instrumental variables, namely IPO-peers O-index/ HQ-peers O-index, identically constructed, except for no longer counting ATPs set apart for the E-index. Since we exploit new instrumental variables for ATPs already in place in the firm, preceding the 2SLS regression is a new probit regression for exploiting the IMR, the results from which are presented in Column (1) of Table IA.5 in the Internet Appendix. Columns (2), (3), and (4) in Table IA.5 present in full the first stage, second stage, and reduced form results, respectively. Column (2) in Table 6 presents abridged second stage results. Despite these changes, our main results continue to indicate that there is a positive association from ATPs already in place in the firm to the decision to use post-bid resistance.

We do the same for the E-index. The results are presented in full in Table IA.6 in the Internet Appendix, and the second stage results are presented in abridged form in Column (3) of Table 6. The results indicate that there is no statistically significant association from, maybe, the most potent ATPs already in place in the firm to the decision to use post-bid resistance by boards.

We reasoned towards the end of Section 2.2 that the ex-ante scenarios discussed in that section also apply separately to any subset of ATPs (say, the ATPs included in the E-index) independent of any other subset of ATPs (say, the ATPs included in the O-index). In particular, we reasoned that if a board is conditioned because of exogenous external factors (irrespective of its inherent motivation) to be passive with respect to one subset of ATPs – subset "X" – and is able to proactively influence another subset of ATPs – subset "Y" – then: (a) if the board is inherently motivated by good-faith bargaining in stockholder interest, we will observe a negative, average, relationship from either subset of ATPs to post-bid resistance; and (b) if the board is inherently motivated by entrenchment considerations, we will observe a positive impact on post-bid resistance from existing subset "Y" ATPs, but no impact on post-bid resistance from existing subset "X" ATPs.

We observe a positive impact on post-bid resistance from the ATPs in the O-index, but no impact on post-bid resistance from the ATPs in the E-index. In this context, our results for both the O-index and the E-index support a dominant entrenchment motivation for post-bid resistance. They are also consistent with boards being ex-ante more constrained in proactively influencing the E-index ATPs, arguably the most potent ATPs in the G-index, relative to the other (O-index) ATPs in the G-index. It is important to point out that the only ATP analyzed by Bates and Becher (2017) is the presence of a classified/staggered board, and this ATP is part of the E-index. The results of Bates and Becher (2017), in relation to the one ATP that they analyzed, should thus be interpreted in the backdrop of our findings.

To examine independently the extent to which boards proactively influence the ATPs included in the E-index and the O-index, we examine mean percentages of firms in our wider sample that adopt, but also do not revoke, one ATP counted in these subsets of the G-index between consecutive updates to the RiskMetrics dataset for the component G-index data. We do so separately for firms selected and not selected as a takeover target. Table 7 presents the results. For firms not selected as a takeover target, the mean percentage of firms that adopt one ATP counted in the O-index is 19.3 percent, as compared to 13.6 percent for the E-index. The difference is statistically significant at the one percent level. This is also the case for firms selected as a takeover target, which is consistent with boards being more constrained in proactively influencing arguably the most potent ATPs of the firm. Additionally, however, the results reveal that, statistically, a significantly higher mean percentage of firms selected as a takeover target adopt one ATP counted in the G-, O-, and E-indices, as compared to other firms. This therefore provides some support for the conclusion of Karpoff et al. (2017) of upward bias in effect of ATPs on takeover target likelihood in the absence of methods capable of circumventing endogeneity.

5. Multivariate Results for Initial Premium and the Post-Bid Resistance Decision

Besides a cash offer, the initial premium is the only other explanatory variable from the univariate analysis that for the multivariate analysis is consistently associated with the decision to use post-bid resistance. The average marginal effect of the initial premium is negative and statistically significant at the one percent level, which is therefore consistent with the corresponding univariate result on the decision to use post-bid resistance. However, the univariate result for the instrumental variable for the initial premium, pre-run-up price to 52-week-high price, suggested that the true association from the initial premium to the decision to use post-bid resistance is likely to be different.

Fishman (1988) proves theoretically that the decision to use post-bid resistance can serve to make public the private information that the initial bidder holds, about the value of selecting the firm as a takeover target, and therefore narrow the advantage over a potential rival. An implication of his proof is that the initial bidder is likely to pre-empt more costly post-bid competition by setting a higher initial premium than would otherwise be the case. In contrast, an implication of the structural work of Dimopoulos and Sacchetto (2014) is that the initial bidder is likely to pre-empt more costly post-bid resistance by disregarding the private information that it holds, and the consequences for post-bid competition, and setting a lower-than-normal initial premium. These implications amount therefore to compelling reasons to suspect that reverse causality is likely to muddle the true association from the initial premium to the decision to use post-bid resistance.

We therefore expand the earlier 2SLS regression in Table 5 to examine the effects of simultaneously instrumenting for the G-index and initial premium on the decision to use post-bid resistance. As such, to generate the results in Table 8, we continue to rely on a standard run-up period of sixty-three trading days before bid announcement for the initial premium, and thus here also for the pre-run-up price to 52-week-high price. However, we produce near identical results when we use a longer run-up period of one-hundred-and-five trading days before bid announcement, in line with the recommendation of Eaton, Liu, and Officer (2021). The parallel results for Table 8 are presented in Table IA.7 of the Internet Appendix. In addition, we examine the implications for the unexplained component of initial premium.

5.1. Effect of Instrumenting for the Initial Premium

Columns (1), (2), and (3) in Table 8 present the results from the first stage for instrumenting the G-index, first stage for instrumenting the initial premium, and second stage for the effects of simultaneously instrumenting for the G-index and initial premium, respectively. The coefficient on the initial premium is not statistically significant at conventional levels.

The comprehensive set of diagnostic test results related to the effects of simultaneously instrumenting for the G-index and initial premium are presented at the base of the regression. The F-statistic for pre-run-up price to 52-week-high price is from the first stage test of the null hypothesis that the

instrumental variable alone has no statistically significant effect on the initial premium at conventional levels. The value of 28.1 gives us confidence in rejecting the null hypothesis, knowing also that the coefficient on pre-run-up price to 52-week-high price is negative. The R^2-statistic for pre-run-up price to 52-week-high price is the first stage measure of the overall variation in the initial premium explained by the variation in the instrumental variable alone. The value of 9.7 percent is sizable considering the generic reference point rationale for the instrumental variable having theoretical validity as a source of variation in the initial premium. The results therefore suggest that the instrumental variable also has statistical validity as a source of variation in the initial premium.

Since we simultaneously exploit the instrumental variables for the G-index and initial premium, the Chi^2-statistic for no over-identification is from the second stage test of the null hypothesis that at least one of the instrumental variables is likely to be exogenous to the decision to use post-bid resistance. The value (of 0.0) is clearly not statistically significant. We therefore have confidence in accepting the null hypothesis, knowing also that the result is just as strong as when only instrumenting for the G-index in Table 5, and that there is no material collinearity between IPO-peers G-index/ HQ-peers G-index and pre-run-up price to 52-week-high price (maximum correlation coefficient between the instrumental variables = 14.8 percent). The results therefore give us reassurance that pre-run-up price to 52-week-high price has not only theoretical validity but also statistical validity as an exogenous source of variation in the initial premium. The remaining result is the Chi^2-statistic from the second stage test of the null hypothesis that the G-index and initial premium are likely to be simultaneously, sufficiently exogenous to the decision to use post-bid resistance as to not require instrumenting. The value of 7.7 is statistically significant at the five percent level. We therefore have confidence in rejecting the null hypothesis, knowing also that the result is stronger than when only instrumenting for the G-index in Table 5, and that we will be evaluating the initial premium alone when examining the implications for the unexplained component of initial premium.

The first stage coefficients on IPO-peers G-index/ HQ-peers G-index for instrumenting the initial premium are not statistically significant at conventional levels. These reduced form results for the effect of instrumenting for the G-index suggest that there is no association from ATPs already in place before a firm's selection as a takeover target to the initial premium, which is further contrary to an often-espoused positive association between ATPs already in place and bargaining in stockholder interest. For instance, Cain et al. (2017) exploit the exogenous passage of antitakeover laws and find that greater protection from a hostile takeover leads to a better-quality outcome for stockholders, if a bid does happen despite having more protection. However, Cuñat et al. (2020) contest these findings by exploiting regression discontinuity applied to stockholder voting and finding that revocation of an ATP leads to a similar outcome for stockholders in the event of a future takeover bid. Only Cuñat et al. (2020) correct, as we do, for takeover target selection in the presence of unobservable factors.

The first stage coefficient on the IMR for instrumenting the initial premium is also not statistically significant at conventional levels, which suggests that there is no tendency for the initial bidder to set the initial premium by taking into consideration the private information that it holds before selecting the firm as a takeover target, and the consequences for post-bid competition. This result does not therefore provide support for the implication that arises from the theory of Fishman (1988), but instead supports the structural inference of Dimopoulos and Sacchetto (2014), who infer that pre-emption of competition from a potential rival bidder accounts for only a fraction of the bid premium.

Column (4) in Table 8 presents the reduced form results for the effects of simultaneously instrumenting for the G-index and initial premium. The coefficient on pre-run-up price to 52-week-high price shows no indication that the instrumental variable for the initial premium is statistically significant at conventional levels. All things so far considered, we at this stage infer that there is no association from the initial premium to the decision to use post-bid resistance.

In contrast, Jennings and Mazzeo (1993) conclude, from estimating a system of simultaneous equations, that there is a negative association from the initial premium to the decision to use post-bid resistance. However, we exploit an exogenous source of variation in the initial premium to examine the effect of instrumenting for the initial premium, whereas they rely entirely on the property that their estimation process automatically accounts for any correlation between the error terms, in relation to treating the initial premium as a suspect endogenous variable. In addition, our sample period begins from the 1990s, whereas their sample covers a preceding period. Moeller (2005) finds evidence to suggest that a reversal occurred during the 1990s in the association between managerial control and the bid premium, which he attributes to ATPs only by then being already widely in place.

5.2. Effect of the Unexplained Component of Initial Premium

So far, our evidence suggests that more bargaining potential for price improvement because of a lower initial premium does not, for an average bid, provide impetus for the decision to use post-bid resistance. According to the ex-ante scenarios in Figure 2, no association runs contrary to the bargaining for price improvement view for explaining the dominant motive behind the board decision to use post-bid resistance. In a related paper, Bates and Becher (2017) find no (negative) correlation between the initial premium (unexplained component of initial premium) and the decision to use post-bid resistance and suggest that the unexplained component of initial premium is a more reliable measure of the quality of the initial public offer. An implication of their findings, again supporting our argument, is that the initial premium is likely endogenous. We examine the implications of what no association from initial premium to post-bid resistance means for the unexplained component of initial premium.

For our analysis, the unexplained component of initial premium is the difference between the observed initial premium and the estimated initial premium from an OLS regression identical to that used in Column (2) of Table 8.[20] We then replace the initial premium with the unexplained component of initial premium in the same 2SLS regression, except for once again only instrumenting for the G-index. Columns (1) and (2) in Table 9 present the first and second stage results, respectively. The second stage coefficient on the unexplained component of initial premium is negative and statistically significant (at the one percent level), which is consistent with the results of Bates and Becher (2017). However, their argument is that an association between the unexplained component of initial premium and the decision to use post-bid resistance provides support for the bargaining in stockholder interest view of post-bid resistance. In contrast, the main issue for our analysis then becomes to what extent this negative association manifests from reverse causality muddling the true relationship from the initial premium to the decision to use post-bid resistance.

To address this issue, we add the initial premium to the same 2SLS regression and exploit the Durbin-Wu-Hausman procedure to evaluate whether the initial premium, alone, is likely to be sufficiently exogenous to the decision to use post-bid resistance. Columns (3) and (4) in Table 9 present the first and second stage results, respectively. The second stage coefficient on the initial premium is not statistically significant at conventional levels, and equivalent to the effect of instrumenting for the initial premium in Table 8 because of already accounting for the unexplained component of initial premium. However, the second stage coefficient on the unexplained component of initial premium is still negative and statistically significant (at the five percent level), which indicates that the initial premium is not sufficiently exogenous to the decision to use post-bid resistance.

The results are underpinned by material positive collinearity between the unexplained component of initial premium and the initial premium (correlation coefficient = 93.2 percent), and by the fact that the unexplained component of initial premium is orthogonal to the IMR. As such, this suggests that there is a tendency for the initial bidder to pre-empt more costly post-bid resistance by setting a higher-than-normal initial premium regardless of their private information and the consequences for post-bid competition, which may account for the downward bias in our OLS result as compared to that from our 2SLS regression. The results therefore provide support for the implication that arises from the structural work of Dimopoulos

[20] Bates and Becher (2017) drop bids with post-bid competition from a rival bidder, and uncompleted bids, and predict a close to immediately acceptable bid premium, in or out of sample, for subtracting from the initial premium. We instead retain such bids to ensure identicalness to when we instrument the initial premium in Column (2) of Table 8, because our intention is to examine the implications of what an unlikely causal association means for the unexplained component of initial premium. Nonetheless, implementing their procedure does not materially alter our results. They include a predictor variable in their regression that is like the instrumental variable for the initial premium in our regression. However, they do not correct, as we do, for takeover target selection in the presence of unobservable factors.

and Sacchetto (2014), who infer that resistance, rather than pre-emption of competition from a potential rival bidder, accounts for most of the bid premium, irrespective of the decision to use post-bid resistance.

Overall, our results continue to indicate that there is no causal association from the initial premium to the decision to use post-bid resistance. At the same time, our results continue to indicate that there is a positive causal effect of the G-index on the decision to use post-bid resistance.

6. Effect of the Decision to Use Post-Bid Resistance

Our analyses of the decision to use post-bid resistance rely on hypothesized drivers of this decision. Given that we make these hypothesized drivers plausibly exogenous to the decision to use post-bid resistance, we conclude that, for an average bid, more ATPs already in place before a firm's selection as a takeover target give more impetus to the decision to use post-bid resistance, and that more potential for price improvement because of a lower initial premium does not impact (measurably) the decision to use post-bid resistance. According to the ex-ante scenarios in Figures 1A, 1B, and 2, we further conclude that the board decision to use post-bid resistance is unlikely to be primarily driven by bargaining in the best interests of stockholders but is instead indicative of a primary entrenchment related motivation.

In contrast, Franks and Mayer (1996), Schwert (2000), and Bates and Becher (2017) document support for the bargaining for price improvement view, except that none of their ex-ante inferences are based on relationships that are plausibly causal. They instead mostly infer board motive behind post-bid resistance from analyzing the effects of the decision to use post-bid resistance. In view of this, and despite the ex-post nature of this form of analysis, our aim in this section is to further explore the question of board motivation behind post-bid resistance by examining, albeit non-causally, as in the above studies, the effect of the decision to use post-bid resistance on key bid outcome related variables. Table 10 describes the variables that we focus on: use of a target termination fee; final premium; bid completion; and overall return to target stockholders. These variables are widely used in the literature on the market for corporate control to capture possible determinants and measures of stockholder wealth beyond the run-up to a public bid.

We first present the descriptive statistics, with means for takeover targets that do and do not use post-bid resistance in Columns (1) and (4), respectively, and with statistical significance of differences in the means in Column (1) of Table 10. The use of a target termination fee averages 50.3 percent for takeover targets that use post-bid resistance, and 87.6 percent for those that do not. The difference in the means is negative and statistically significant at the one percent level, which is consistent with the results of Bates and Lemmon (2003) and Officer (2003), who infer from extensive analyses that the use of a target termination fee is to serve as a signal of commitment in exchange for a better-quality outcome for stockholders. Given the association with bargaining for price improvement and given that our measure of the use of a target termination fee accounts for multiple offers separated by up to one year, this result

suggests that the effect of the post-bid resistance decision on the use of a target termination fee is unlikely in the main to be in the best interests of stockholders.

The final premium averages 46.7 percent for takeover targets that use post-bid resistance, and 42.9 percent for those that do not do so. Despite considerable weight attached to evidence related to revised and rival offers as suggesting that the decision to use post-bid resistance is associated with bargaining for price improvement in stockholder interest (in particular, as in Jennings and Mazzeo, 1993; Franks and Mayer, 1996; Schwert, 2000; and Bates and Becher, 2017), and despite the fact that our measure of the final public premium accounts for multiple offers separated by up to one year, the difference in the means is not statistically significant at conventional levels. The final premium appears to be unaffected by whether there is post-bid resistance. Conversely, the final premium is seldom higher than the initial premium for takeover targets that do not use post-bid resistance, a result that is consistent with bargaining for price improvement in the run-up to a public bid for takeover targets that do not use post-bid resistance (see, Boone and Mulherin, 2007; Aktas et al., 2010; and Brown Jr. et al., 2022). Again, it appears unlikely in the main that post-bid resistance represents good-faith bargaining for stockholders.

Bid completion averages 64.2 percent for takeover targets that use post-bid resistance, and 94.6 percent for those that do not do so. The difference in the means is negative and statistically significant at the one percent level, which is consistent with the results of Walkling (1985). Given the considerable weight attached to extant evidence related to revised and rival offers as suggesting that the decision to use post-bid resistance is associated with bargaining for price improvement in stockholder interest, and given that our measure of bid completion accounts for multiple offers separated by up to one year, this result again suggests that the effect of the decision to use post-bid resistance on bid completion is unlikely in the main to be in the best interests of stockholders.

The overall return averages 18.1 percent for takeover targets that use post-bid resistance, and 27.0 percent for those that do not do so. The difference in the means is negative and statistically significant at the one percent level, which suggests that the decision to use post-bid resistance has an adverse effect on the overall return to stockholders and is unlikely therefore to in the main be in their best interests. This result contrasts with the findings of Schwert (2000), who finds a beneficial effect on the overall return to target stockholders for measures of bid hostility closest to our measure of the decision to use post-bid resistance. However, we require a measurement period for the overall return that impounds information for multiple offers separated by up to one year, whereas he is reliant on a shorter measurement period. In addition, we extend the measurement period for the overall return to one year after an uncompleted bid to allow for sufficient settling down in the stock price of the takeover target, whereas, despite an analogous measure of bid completion, he is again reliant on the shorter measurement period.

Finally, we draw on regressions to examine effect of the decision to use post-bid resistance. The dependent variables are now our bid outcome related variables. Our post-bid resistance variable changes therefore from having been the (limited) dependent variable in our earlier core analysis to being now the main (dummy) explanatory variable in this part of our analysis. The other explanatory variables are the features of the firm and the bid, the IMR, and the industry and year controls, all as per the 2SLS regression in Table 8. However, we only account for the reduced form effects of simultaneously instrumenting for the G-index and initial premium because, whilst respecting the evidence from our earlier core analysis indicating that neither variable is sufficiently exogenous to the decision to use post-bid resistance, our main interest in this section is in the effect of the decision to use post-bid resistance. In addition, we account for whether a takeover bid begins as a tender offer, which is a standard control when examining effect of the decision to use post-bid resistance, regardless of how a bid is initially structured. Although a tender offer and the decision to use post-bid resistance are positively correlated (consistent with the results of Schwert, 2000), the correlation is not of a material extent (correlation coefficient = 8.0 percent).

The results from a probit regression for the use of a target termination fee, an OLS regression for the final premium, a probit regression for bid completion, and an OLS regression for the overall return are presented in Columns (1)-(4), respectively, of Table 11. In each case, after including all the control variables in the regressions, the (probit regression) average marginal effects of, and the (OLS) regression coefficients on, the decision to use post-bid resistance are wholly consistent with the univariate results documented above.

Therefore, for each of the bid outcome related variables that we examine in this section, the average effect of post-bid resistance does not come out as being in the best interests of stockholders and, hence, is inconsistent with dominance of the bargaining for price improvement view of why the board uses post-bid resistance. Instead, these results are further indicative of a primary entrenchment motivation for post-bid resistance. Furthermore, taken together, our analysis here and our earlier core analysis suggests that revised and rival offers, long associated with bargaining for price improvement in stockholder interest, are a by-product and not a driver of the decision to use post-bid resistance.

7. Summary and Concluding Remarks

In this paper, we make three important contributions to the extensive literature on the market for corporate control. First, we empirically analyze, through a research design that accounts for endogeneity and thereby facilitates causal inference, the observed effect of the generic takeover impediments (i.e., the antitakeover provisions (or ATPs) in corporate charters and bylaws) already in place in a target firm prior to any takeover bid interest in that firm, on the board's decision to resist an actual public takeover bid. Second, we empirically analyze, again in a way that facilitates causal inference, the observed effect of the

initial public takeover bid premium on the target board's decision to resist post-bid. Third, we develop a conceptual modeling framework for inferring what these causal relationships, generated using well-documented context-relevant instrumental variables, imply for the long-standing debate around the overarching question of whether or not target boards in the U.S. act significantly more as bona-fide fiduciaries of shareholders than as self-serving fiduciaries, when they decide to use post-bid takeover resistance.

We find a positive and significant causal relationship from credibly exogenous and distinct sources of variation in ATPs already in place to the post-bid resistance decision. After correcting for sample selection, which is itself impacted by ATPs, the effect of an instrumented ATP index that counts all widely-accepted ATPs equates to an average 4.3 percentage points increase in the likelihood of the use of post-bid resistance for each additional ATP already in place. To give perspective to this result, boards of 17.4 percent of our sample of 995 U.S. takeover target firms over a period of twenty years use post-bid resistance of one form or another. In other words, having more ATPs already in place prior to receiving any bid interest, and hence more potential to catalyze or bargain (pre-bid) for a higher bid premium, does not result in a lower likelihood of target boards taking action to resist the public takeover bid. In fact, target firms with more ATPs resist significantly more post-bid, rather than less. Our analysis takes into account the possibility that an initial bidder's private information advantage sometimes renders existing ATPs less effective than they would otherwise be, thereby necessitating post-bid resistance irrespective of the board's inherent motivation.

Concurrently, we find no evidence of a causal relationship between the initial public takeover bid premium and post-bid resistance, and also no relationship between ATPs already in place prior to receiving any bid interest, and the initial public takeover bid premium. The decisions of target boards to use post-bid resistance are hence unrelated to the potential for further price improvement beyond that included in the initial public takeover bid premium.

We develop a conceptual modeling framework that is fully aligned with the extant literature to infer what these effects imply for the underlying inherent target board motivation behind post-bid takeover resistance. We assume that negotiations with a potential public bidder, and any associated price revisions, occur prior to an initial public takeover offer, and are undertaken within the context of the ATPs already in place in the target firm. We model the inherent underlying board motivation behind post-bid resistance as being either good-faith bargaining to get the best outcome for shareholders, or self-serving entrenchment considerations. While recognizing that boards in the U.S. have full discretion *de jure* in regard to ATPs, we also allow for time-varying external factors (like public perceptions, signaling imperatives, and views of influential stakeholders) to condition, irrespective of the underlying board motivation, the general policy of the board in relation to the absence or presence of different subsets of ATPs.

Our conceptual modeling framework provides clear implications. With respect to ATPs already in place in the firm, we can conclude good-faith bargaining as the underlying board motivation for post-bid resistance only if we find a significant negative relationship from existing ATPs to post-bid resistance; whilst a positive relationship, or the absence of any relationship, points to an entrenchment motivation for post-bid takeover resistance. Similarly, we can conclude good-faith bargaining as board motivation for post-bid resistance only if we find a negative relationship from the initial public bid premium to post-bid resistance; whilst the absence of any relationship points to an entrenchment motivation, with no clear inference if the initial public bid premium relates positively to the board decision to resist post-bid.

Hence, our results for our empirical investigations – the causal relationship from extant ATPs and from initial public bid premiums to post-bid resistance – both indicate that the post-bid resistance decisions of target-firm boards in our twenty-year sample period are motivated significantly more by entrenchment considerations than by good-faith bargaining for stockholders. Ours is the first study to draw this conclusion in a manner that directly frames the post-bid resistance decision, and a research design that accounts for endogeneity, thereby facilitating causal inferences. We also infer, again from both of our empirical analyses, with and without the use of instrumental variables, that material non-circumvented endogeneities are likely to be present in earlier studies, stemming largely from the fact that salient determinants of the post-bid resistance decision, as well as the post-bid resistance decision itself, are likely to be dependent upon the inherent underlying motivations of the target board.

Several interesting avenues for future research emerge from our study. First, while we use direct and credibly causal evidence to contribute to the broader debate around board motivation for resisting takeovers, what our findings and inferences reflect is the *overall* picture. A significant proportion of target-firm boards could well be exercising their discretion diligently as *bona fide* (rather than self-serving) fiduciaries for shareholders when they decide to resist post-bid. Indeed, our findings in relation to the initial public bidder's private information advantage attest to this possibility. We leave to future research the examination of cross-sectional differences across firms in the context of the issues that we address in this paper. Second, given that our results suggest that boards could be relatively constrained in relation to changing the status quo for what may be the most potent or publicly sensitive ATPs at any given point of time, this study highlights a need for future research into the underlying motivation of boards in relation to (proactively or otherwise) influencing ATPs already in place in the firm to meet their overall corporate control objectives. Third, given that takeover negotiations of boards with potential public bidders are often not transparent, our findings and inferences also point to a need for greater understanding of the nature and the tools of the bargaining process in the run-up to a public bid, particularly for target boards that decide not to use post-bid resistance to aid further bargaining beyond the initial public offer.

Finally, the findings and inferences that we document in this paper have important implications for a key policy level difference between the U.S. on the one hand, and the U.K., Australia, New Zealand, and most E.U. countries, on the other hand. This is the difference in the level of discretion permissible to boards to resist a public takeover bid within their respective governance and legal regimes. Overall, our paper highlights the critical relevance of the ongoing debate around the virtually unfettered board discretion that exists in U.S. law and practice in the context of public takeover bid resistance. Our findings and inferences suggest a need to introduce in the U.S. a framework of checks and balances in the hands of shareholders, or measures that can effectively incentivize intransigent boards to exercise their discretion or primacy in a manner that best serves shareholders. In this context, in relation to the latter issue, it is worth noting that recent research into another key board decision documents that shareholders benefit from mandatory voting in the U.K. (e.g., Becht, Polo, and Rossi, 2016) and from voluntary non-mandatory voting in the U.S. (e.g., Li, Liu, and Wu, 2018). We leave a deeper examination of these and related issues for future research.

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Figures

Figure 1

Ex-ante scenarios relating to the antitakeover provisions already in place in the firm for inferring board motivation for post-bid resistance

Figures 1A and 1B schematically represents *ex-ante* scenarios relating to the antitakeover provisions (ATPs) already in place in the firm for inferring the likely primary board motivation for post-bid resistance. The *ex-ante* scenarios assume a binary conceptual framework, in which post-bid resistance by boards is inherently driven either by good-faith bargaining in stockholder interest (Figure 1A) or by entrenchment considerations (Figure 1B). While acknowledging the right of the board to adopt, leave in place, or revoke an ATP *de jure*, we also allow for the possibility that the board functions *de facto* within an external environment that is governed by influential exogenous external factors – e.g., stakeholder pressures, public perceptions, and signaling imperatives – and these factors may necessitate, independent of the inherent motivation of the board, general board "policies" about actively influencing or remaining passive in relation to adopting, leaving in place, or removing specific subsets of the ATPs. The 'no-bid' phase denotes a period in the absence of a takeover bid, and not in the immediate expectation of one. The 'pre-bid' phase denotes a period in the run-up to a public takeover bid, in which private negotiations with potential public bidders can occur. The 'post-bid' phase denotes a period that begins with the first public announcement of a takeover bid. The implied relationships from the extant ATPs of the firm to post-bid resistance by boards are set out in the last column and amount to average relationships. Satisfaction of the exogeneity condition is assumed and rationalized in Section 3.2.1. Section 2 provides full details of the *ex-ante* scenarios and underlying conceptual framework.

Figure 1A: Boards inherently driven by good-faith bargaining in stockholder interest

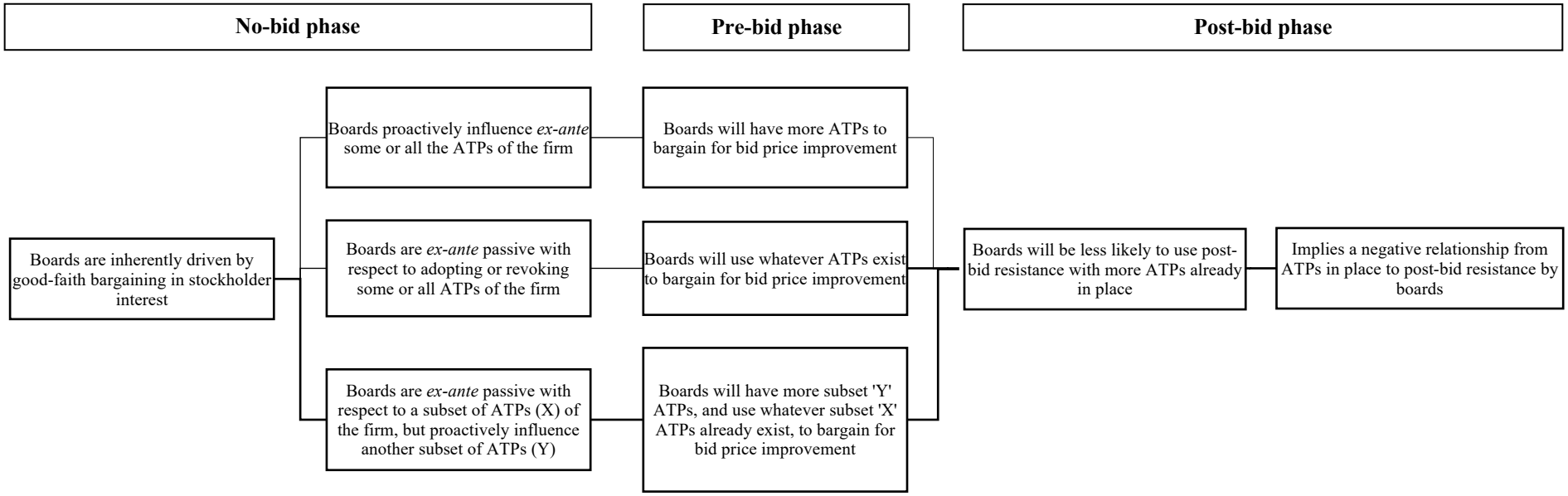


Figure 1 (continued)

Figure 1B: Boards inherently driven by entrenchment considerations

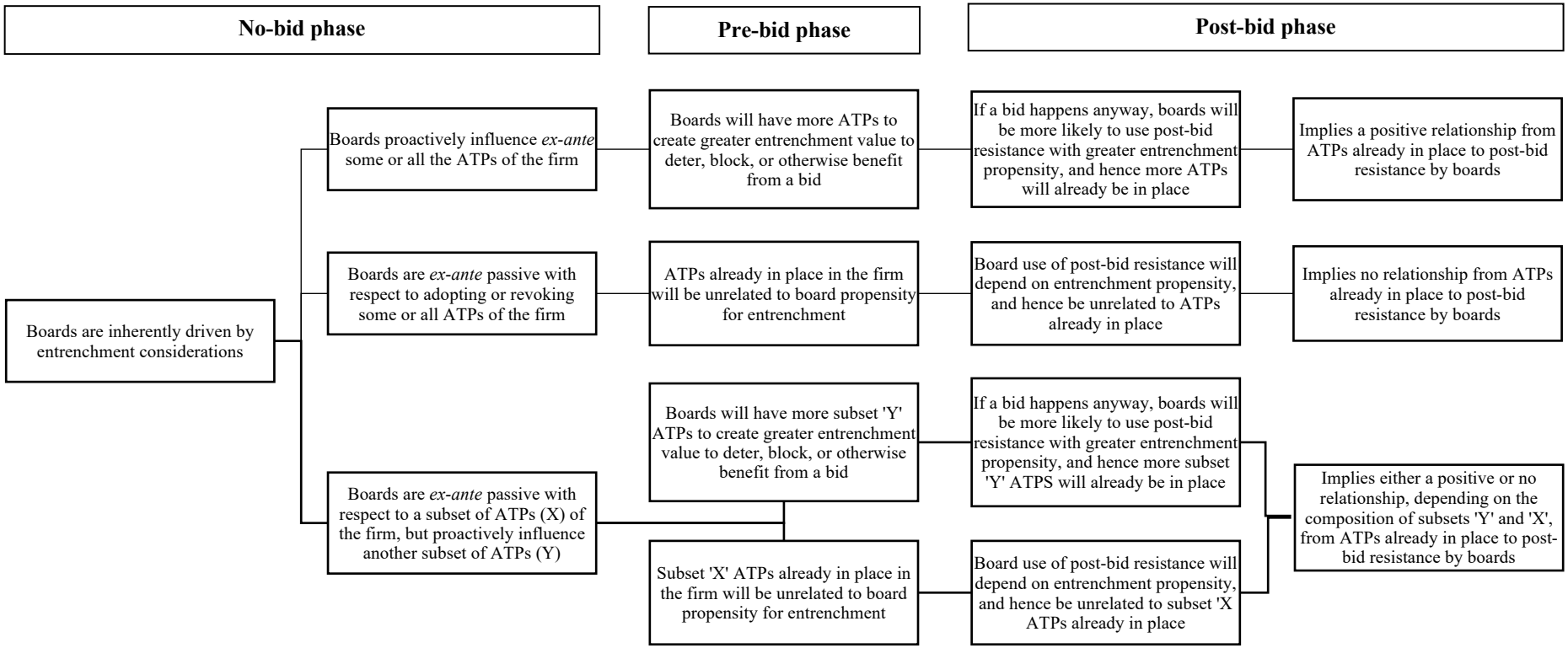
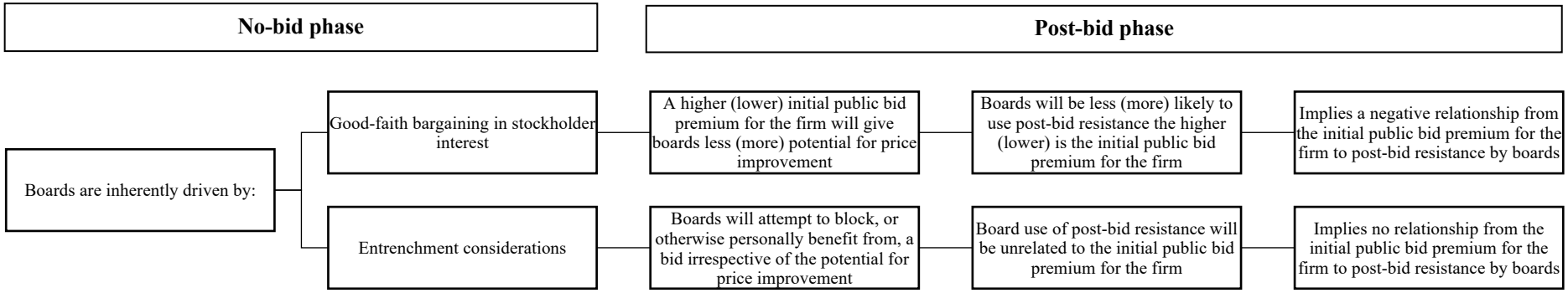


Figure 2

Ex-ante scenarios relating to the initial public bid premium for the firm for inferring board motivation for post-bid resistance

This figure schematically represents *ex-ante* scenarios relating to the initial *public* bid premium for the firm for inferring the likely primary board motivation for post-bid resistance. The *ex-ante* scenarios assume a binary conceptual framework, in which post-bid resistance by boards is inherently driven either by good-faith bargaining in stockholder interest or by entrenchment considerations. The 'no-bid' phase denotes a period in the absence of a takeover bid, and not in the immediate expectation of one. There is no explicit 'pre-bid' phase because here the *ex-ante* scenarios concern effect of the initial public bid premium, measured relative to the target firm's pre-run-up price. The 'post-bid' phase denotes a period that begins with the first public announcement of a takeover bid. The implied relationships from the initial public bid premium to post-bid resistance by boards are set out in the last column and amount to average relationships. Satisfaction of the exogeneity condition is assumed and rationalized in Section 3.2.2. Section 2 provides full details of the *ex-ante* scenarios and underlying conceptual framework.



Tables

Table 1

Variable descriptions

This table describes the explanatory variables.

Variable	Description
Firm features	
G-index	The Gompers, Ishii, and Metrick (2003) measure of antitakeover provisions (ATPs) already in place one year before ascertaining takeover target selection for a firm each year. The G-index adds one for each ATP out of a counted twenty-four. The component G-index data is from the RiskMetrics dataset after forward filling the data for 2006 and between earlier data points.
IPO-peers G-index	The first instrumental variable for the G-index constructed three years before ascertaining takeover target selection for a firm each year but restricted to a group of peers for the firm. IPO-peers G-index sums the adoption rates for the individual antitakeover provisions (ATPs) counted in the G-index for a group of peers from sectors not shared with the firm, based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged (CCM) database, and with a specific connection to the firm related to the past adoption of ATPs. The connection is related to time in that the firm and peers experienced the same legal environment for the adoption of ATPs because of sharing the same year of initial public offering (IPO), which is taken to be the year of inclusion in the CCM database or 1950 when included earlier.
HQ-peers G-index	The second instrumental variable for the G-index constructed three years before ascertaining takeover target selection for a firm each year but restricted to a group of peers for the firm. HQ-peers G-index sums the adoption rates for the individual antitakeover provisions (ATPs) counted in the G-index for a group of peers from sectors not shared with the firm, based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged (CCM) database, and with a specific connection to the firm related to the past adoption of ATPs. The connection is related to geography in that the firm and peers are likely to have received similar legal advice on the adoption of ATPs because of sharing the same state locale of headquarters (HQ), which is taken to be a state locale with a radius of one-hundred miles based on zone improvement plan codes from the CCM database and geographical coordinates from the GeoNames database.
Size	The book value of total assets in millions of 2011 dollars one year before ascertaining takeover target selection for a firm each year. The book value and inflation data are from the Center for Research in Security Prices and Compustat Merged database.
Leverage	The total debt as a proportion of the book value of total assets one year before ascertaining takeover target selection for a firm each year. The book values are from the Center for Research in Security Prices and Compustat Merged database.
Market value to book value	The market value of total assets as a proportion of the book value of total assets one year before ascertaining takeover target selection for a firm each year. The market and book values are from the Center for Research in Security Prices and Compustat Merged database.
Liquidity	The working capital as a proportion of the book value of total assets one year before ascertaining takeover target selection for a firm each year. The book values are from the Center for Research in Security Prices and Compustat Merged database.
Tangibility	The tangible assets as a proportion of the book value of total assets one year before ascertaining takeover target selection for a firm each year. The book values are from the Center for Research in Security Prices and Compustat Merged database.

Table 1 (continued)

Variable	Description
Firm features	
Sales growth	The proportionate difference between sales one and two years before ascertaining takeover target selection for a firm each year. The sales are from the Center for Research in Security Prices and Compustat Merged database.
Return on assets	The operating income before depreciation as a proportion of the book value of total assets one year before ascertaining takeover target selection for a firm each year. The operating income and book value are from the Center for Research in Security Prices and Compustat Merged database.
Stock return	The value weighted market adjusted return one year before ascertaining takeover target selection for a firm each year. The returns are from the Center for Research in Security Prices and Compustat Merged database.
Industry concentration	The Herfindahl-Hirschman measure of industry concentration one year before ascertaining takeover target selection for a firm each year. Industry concentration sums the squared proportionate sales for the sector in which the firm primarily operates based on historic two-digit standard industrial classification codes. The sales and codes are from the Center for Research in Security Prices and Compustat Merged database.
Bid features	
Initial premium	The proportionate difference between the initial bid price and the pre-run-up price of the takeover target. The initial bid price is from the Securities Data Company database, and the pre-run-up price is the stock price of the takeover target sixty-four trading days before bid announcement from the Center for Research in Security Prices and Compustat Merged database. The initial premium is winsorized at the fifth and ninety-fifth percentiles.
Pre-run-up price to 52-week-high price	The instrumental variable for the initial premium is the proportionate difference between the pre-run-up price and the preceding fifty-two-week high price of the takeover target. The pre-run-up price is the stock price of the takeover target sixty-four trading days before bid announcement. The prices are from the Center for Research in Security Prices and Compustat Merged database.
Cash offer = 1	A dummy variable that equals one (zero) for takeover targets for which the use of only cash is (is not) the intended method of payment by the initial bidder based on flags from the Securities Data Company database.

Table 2

Sample

This table describes the sample. The sample is at the intersection of the RiskMetrics dataset for the component Gompers, Ishii, and Metrick (2003) G-index data and Center for Research in Security Prices and Compustat Merged (CCM) database for other firm data. Observations are removed for which the firm is flagged in the RiskMetrics dataset as having dual class common stock or coded in the CCM database as having primary operations in the financial or utility sectors based on historic two-digit standard industrial classification. An unbalanced panel of U.S.-incorporated firms is initially constructed for the period 1990-2011 by forward filling the component G-index data for 2006 and between earlier data points. The sample contains 21,375 observations for the period 1992-2011. For 995 of the observations the firm is selected as a takeover target the following year. The following years, 1993-2012, are the sample period. The Securities Data Company database is utilized for ascertaining takeover target selection for a firm each year. A bid is required to be an attempt to acquire common stock of more than fifty percent and disclose an offer price. Multiple attempts to acquire a firm are merged into a single bid when the attempts are separated by no more than one year. Bids beginning before the sample period are then not counted. Bids that are, or involve, an attempt by managers to acquire the firm are also not counted. All observations for a firm after a bid that is, or involves, an attempt by managers to acquire the firm are removed. News sources from the Factiva database are searched for ascertaining the decision to use any form of post-bid resistance, which ranges from merely recommending rejection of the initial offer to at the extreme deploying, or threatening to deploy, a defense discriminating against at least the initial bidder. Also counted is the decision by boards to adopt any post-bid antitakeover provision, one of the most common types of which is a 'morning after' poison pill. The searchable timeframe extends from the first public announcement of a bid to the very end of a bid, in the sense of having merged some multiple attempts to acquire a firm. Columns (1)-(3) present frequency distributions for all observations, observations for which the firm is selected as a takeover target, and takeover targets that use post-bid resistance, respectively. Columns (4) and (5) present rates of takeover target selection and the use of post-bid resistance, respectively.

Year	Firms (Year -1) (1)	Firms selected as a takeover target (Year) (2)	Takeover targets that use post-bid resistance (Year) (3)	Percentage of firms selected as a takeover target (4)	Percentage of takeover targets that use post-bid resistance (5)
1993	753	9	3	1.2	33.3
1994	854	22	5	2.6	22.7
1995	845	33	10	3.9	30.3
1996	899	36	10	4.0	27.8
1997	876	50	10	5.7	20.0
1998	873	55	6	6.3	10.9
1999	1,192	103	15	8.6	14.6
2000	1,068	88	9	8.2	10.2
2001	1,052	43	4	4.1	9.3
2002	1,008	17	3	1.7	17.7
2003	1,264	30	4	2.4	13.3
2004	1,243	43	10	3.5	23.3
2005	1,344	79	15	5.9	19.0
2006	1,278	72	11	5.6	15.3
2007	1,304	93	11	7.1	11.8
2008	1,203	52	19	4.3	36.5
2009	1,134	41	5	3.6	12.2
2010	1,099	38	7	3.5	18.4
2011	1,064	44	10	4.1	22.7
2012	1,022	47	6	4.6	12.8
Overall	21,375	995	173	4.7	17.4

Table 3

Variables and univariate results

This table presents descriptive statistics for the explanatory variables for the decision to use post-bid resistance. Columns (1)-(3) and Columns (4)-(5) present mean, standard deviation, and observations for the explanatory variables for takeover targets that do and do not use post-bid resistance, respectively. The sample is described in Table 2. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index/ HQ-peers G-index) and initial premium (pre-run-up price to 52-week-high price). The explanatory variables are described in Table 1. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively, of differences in the means.

	Takeover targets that use post-bid resistance			**Takeover targets that do not use post-bid resistance**		
	Mean	**Std dev.**	**Obs**	**Mean**	**Std dev.**	**Obs**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Firm features						
G-index	9.376**	2.436	173	8.878	2.635	822
IPO-peers G-index	9.115***	1.100	172	8.787	1.079	820
HQ-peers G-index	9.082*	0.926	167	8.927	0.945	809
Size	3,237.3	6,350.0	173	2,548.8	6,254.3	820
Leverage	0.198	0.162	173	0.184	0.179	819
Market value to book value	1.539***	0.795	172	1.780	0.979	815
Tangibility	0.589**	0.356	171	0.522	0.395	809
Liquidity	0.196**	0.187	173	0.236	0.211	820
Sales growth	0.023	0.164	173	0.161	2.282	820
Return on assets	0.109	0.099	171	0.115	0.159	812
Stock return	-0.114	0.445	173	-0.116	0.450	822
Industry concentration	0.094	0.069	173	0.095	0.075	821
Bid features						
Initial premium	0.340***	0.265	173	0.424	0.297	822
Pre-run-up price to 52-week-high price	-0.244	0.203	173	-0.245	0.202	822
Cash offer = 1	0.566***		173	0.454		822

Table 4

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index

Column (1) presents the results from an ordinary least squares regression for the effect of the non-instrumented G-index on the decision to use post-bid resistance. Columns (2)-(4) present the results from a two stage least squares regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. First and second stage diagnostic test results are presented at the base of the regression. The sample is described in Table 2. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables are described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Robust standard errors are presented in parentheses below coefficients. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Ordinary least squares regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Post-bid resistance = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index	0.0063		0.0592***	
	(0.0046)		(0.0191)	
IPO-peers G-index		0.5954***		0.0339***
		(0.0742)		(0.0116)
HQ-peers G-index		0.2783**		0.0198
		(0.1091)		(0.0134)
Initial premium	-0.1280***	0.1354	-0.1296***	-0.1214***
	(0.0402)	(0.2729)	(0.0427)	(0.0401)
ln(Size)	0.0176	0.3267***	-0.0057	0.0138
	(0.0108)	(0.0650)	(0.0136)	(0.0108)
Leverage	0.0281	0.6910	-0.0301	0.0098
	(0.0741)	(0.4984)	(0.0793)	(0.0733)
Market value to book value	-0.0263*	-0.0780	-0.0156	-0.0199
	(0.0137)	(0.0902)	(0.0148)	(0.0131)
Tangibility	0.0507	-0.1090	0.0469	0.0402
	(0.0336)	(0.2335)	(0.0356)	(0.0335)
Liquidity	-0.0534	-0.5032	-0.0257	-0.0552
	(0.0681)	(0.4541)	(0.0733)	(0.0684)
Sales growth	-0.0031*	-0.0079	-0.0019	-0.0023
	(0.0016)	(0.0105)	(0.0017)	(0.0016)
Return on assets	-0.1542	-1.4563**	-0.1116	-0.2024*
	(0.1077)	(0.6838)	(0.1135)	(0.1121)
Stock return	0.0069	0.2418	-0.0063	0.0080
	(0.0303)	(0.1964)	(0.0322)	(0.0300)
Industry concentration	-0.2037	-1.4263	-0.0825	-0.1669
	(0.1610)	(1.1269)	(0.1742)	(0.1619)
Cash offer = 1	0.0799***	-0.0752	0.0882***	0.0840***
	(0.0258)	(0.1612)	(0.0273)	(0.0258)
Constant	0.0769	-0.5182	-0.2756*	-0.3255*
	(0.0998)	(1.2067)	(0.1626)	(0.1743)

Table 4 (continued)

	Ordinary least squares regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Post-bid resistance = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
F-statistic overall	4.7***			5.1***
R^2-statistic overall	4.1%			5.0%
Chi^2-statistic overall		58.3***		
F-statistic IPO-peers G-index/ HQ-peers G-index		38.4		
R^2-statistic IPO-peers G-index/ HQ-peers G-index		7.8%		
Chi^2-statistic no over-identification		0.1		
Chi^2-statistic exogeneity		8.8***		
Obs	975	954		954

Table 5

Multivariate results for G-index and the decision to use post-bid resistance: effect of private information held by the initial bidder

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index/ HQ-peers G-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0490**	
			(0.0209)	
IPO-peers G-index	-0.0033**	0.5638***		0.0276**
	(0.0014)	(0.0751)		(0.0119)
HQ-peers G-index	-0.0044***	0.2357**		0.0114
	(0.0016)	(0.1110)		(0.0138)
Initial premium		0.1224	-0.1299***	-0.1239***
		(0.2728)	(0.0416)	(0.0398)
California incorporation = 1	0.0396***			
	(0.0121)			
Inverse Mills ratio		0.9664**	0.1427*	0.1901***
		(0.4784)	(0.0795)	(0.0710)
ln(Size)	-0.0104***	0.2343***	-0.0158	-0.0043
	(0.0012)	(0.0780)	(0.0131)	(0.0120)
Leverage	0.0215**	0.9422*	0.0130	0.0592
	(0.0102)	(0.5137)	(0.0814)	(0.0744)
Market value to book value	-0.0080***	-0.1228	-0.0227	-0.0287**
	(0.0017)	(0.0925)	(0.0155)	(0.0138)
Tangibility	-0.0051	-0.1439	0.0404	0.0333
	(0.0044)	(0.2336)	(0.0350)	(0.0336)
Liquidity	-0.0328***	-0.7621	-0.0688	-0.1061
	(0.0089)	(0.4636)	(0.0756)	(0.0699)
Sales growth	0.0017	0.0002	-0.0007	-0.0007
	(0.0012)	(0.0108)	(0.0017)	(0.0017)
Return on assets	-0.0154	-1.4000**	-0.1229	-0.1913*
	(0.0153)	(0.6809)	(0.1105)	(0.1100)
Stock return	-0.0030	0.1213	-0.0216	-0.0157
	(0.0035)	(0.2031)	(0.0324)	(0.0316)
Industry concentration	-0.0588***	-1.8936*	-0.1661	-0.2588
	(0.0192)	(1.1389)	(0.1736)	(0.1602)

Table 5 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Cash offer = 1		-0.0749	0.0877***	0.0840***
		(0.1607)	(0.0267)	(0.0257)
Constant	0.0460***	-1.0311	-0.3767**	-0.4265**
	(0.0014)	(1.2250)	(0.1613)	(0.1772)
Chi^2-statistic overall	365.2***	66.5***		
R^2-statistic pseudo	4.9%			
F-statistic overall				5.3***
R^2-statistic overall				5.8%
F-statistic IPO peers G-index/ HQ peers G-index		31.7		
R^2-statistic IPO-peers G-index/ HQ-peers G-index		6.4%		
Chi^2-statistic no over-identification		0.0		
Chi^2-statistic exogeneity		5.0**		
Obs	20,717	954		954

Table 6

Multivariate results for different functional forms of the G-index, and for the E-index and the O-index subsets of the G-index

Column (1) presents abridged second equation results from a two-equation probit regression for the effect of instrumenting for the G-index in dummy form on the decision to use post-bid resistance. The results are presented in full in Table IA.4 in the Internet Appendix. A second equation diagnostic test result is presented at the base of the regression. G-index in dummy form equals one (zero) for firms each year with a G-index in excess (not in excess) of the median G-index for all firms in that year. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. The G-index and instrumental variables are described in Table 1. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 as an exogenous estimate of private information held by the initial bidder. Column (2) presents abridged second stage results from a two stage least squares (2SLS) regression for the effect of instrumenting for the G-index in partial form (O-index) on the decision to use post-bid resistance. The results are presented in full in Table IA.5 in the Internet Appendix. First and second stage diagnostic test results are presented at the base of the regression. The O-index and instrumental variables for the G-index in partial form (IPO-peers O-index/ HQ-peers O-index) are identically constructed to the G-index and instrumental variables except for not counting the six antitakeover provisions (ATPs) set apart by Bebchuk, Cohen, and Ferrell (2009). The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table IA.5. Column (3) presents the second stage results from a 2SLS regression for the effect of instrumenting for the G-index in partial form (E-index) on the decision to use post-bid resistance. The results are presented in full in Table IA.6 in the Internet Appendix. First and second stage diagnostic test results are presented at the base of the regression. The E-index and instrumental variables for the G-index in partial form (IPO-peers E-index/ HQ-peers E-index) are identically constructed to the G-index and instrumental variables except for only counting the six ATPs set apart by Bebchuk et al. (2009). The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table IA.6. The sample is described in Table 2. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. Corrected standard errors are presented in parentheses below average marginal effects (coefficients) for the two-equation probit regression (2SLS regressions). $^{***, **, *}$ indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two equation probit regression	**Two stage least squares regression**	**Two stage least squares regression**
	Post-bid resistance = 1	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**
G-index = 1	0.2655***		
	(0.0934)		
O-index		0.0729***	
		(0.0259)	
E-index			0.0098
			(0.0623)
Inverse Mills ratio	0.1716***	0.1323*	0.2059***
	(0.0664)	(0.0779)	(0.0725)
Chi^2-statistic overall	227.7***	64.7***	60.6***
F-statistic IPO peers O-index/ HQ peers O-index		42.4	
R^2-statistic IPO-peers O-index/ HQ-peers O-index		8.2%	
F-statistic IPO peers E-index/ HQ peers E-index			10.8
R^2-statistic IPO-peers E-index/ HQ-peers E-index			2.5%
Chi^2-statistic no over-identification		0.2	0.6
Chi^2-statistic exogeneity	6.1**	8.3***	0.0
Obs	954	954	954

Table 7

Mean percentages of firms that adopt one antitakeover provision counted in the G-index, the E-index, and the O-index

This table presents mean percentages of firms that adopt, but also do not revoke, one antitakeover provision (ATP) counted in the Gompers, Ishii, and Metrick (2003) G-index in complete and partial forms. O-index (E-index) does not count (only counts) the six ATPs set apart by Bebchuk, Cohen, and Ferrell (2009). Adoptions occur between consecutive updates to the RiskMetrics dataset for the component G-index data. Columns (1) and (2) are for updates for firms selected as a takeover target. Columns (3) and (4) are for updates for firms not selected as a takeover target. The sample is described in Table 2. $^{***, **, *}$ indicate statistical significance at the one, five, and ten percent levels, respectively, of differences in the means for firms selected and not selected as a takeover target. $^{\wedge\wedge\wedge, \wedge\wedge, \wedge}$ indicate statistical significance at the one, five, and ten percent levels, respectively, of differences in the means for the O-index and E-index.

	Updates for firms selected as a takeover target	Obs	Updates for firms not selected as a takeover target	Obs
Mean percentages of firms	**(1)**	**(2)**	**(3)**	**(4)**
That adopt one ATP counted in the G-index	36.8***	2,225	28.5	4,060
That adopt one ATP counted in the O-index	24.9***, ^^^	2,225	19.3^^^	4,060
That adopt one ATP counted in the E-index	18.2***	2,225	13.6	4,060

Table 8

Multivariate results for initial premium and the decision to use post-bid resistance: effect of instrumenting for initial premium

Columns (1)-(4) present the results from a two stage least squares regression for the effects of simultaneously instrumenting for the G-index and initial premium on the decision to use post-bid resistance. Column (1) presents the first stage results for instrumenting the G-index. Column (2) presents the first stage results for instrumenting the initial premium. Column (3) presents the second stage results for the effects of simultaneously instrumenting for the G-index and initial premium. Column (4) presents the reduced form results for the effects of simultaneously instrumenting for the G-index and initial premium. First and second stage diagnostic test results are presented at the base of the regression. The sample is described in Table 2. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The instrumental variables are IPO-peers G-index/ HQ-peers G-index for the G-index and pre-run-up price to 52-week-high price for the initial premium. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below coefficients. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two stage least squares regression			
	First stage	First stage	Second stage	Reduced form
	G-index	Initial premium	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0520**	
			(0.0219)	
IPO-peers G-index	0.5495***	0.0086		0.0293**
	(0.0758)	(0.0086)		(0.0120)
HQ-peers G-index	0.2217**	0.0018		0.0137
	(0.1113)	(0.0103)		(0.0142)
Initial premium			0.1492	
			(0.1443)	
Pre-run-up price to 52-week-high price	0.5954	-0.5370***		-0.0499
	(0.4373)	(0.0585)		(0.0713)
Inverse Mills ratio	1.0750**	-0.0540	0.1304	0.1765**
	(0.4880)	(0.0604)	(0.0809)	(0.0708)
ln(Size)	0.2165***	-0.0063	-0.0112	-0.0005
	(0.0794)	(0.0096)	(0.0136)	(0.0122)
Leverage	0.9808*	0.1418**	-0.0333	0.0379
	(0.5086)	(0.0586)	(0.0869)	(0.0748)
Market value to book value	-0.1230	-0.0107	-0.0199	-0.0276**
	(0.0912)	(0.0117)	(0.0151)	(0.0135)
Tangibility	-0.1530	-0.0762***	0.0622*	0.0427
	(0.2321)	(0.0264)	(0.0373)	(0.0332)
Liquidity	-0.7755*	-0.0346	-0.0553	-0.1002
	(0.4615)	(0.0618)	(0.0782)	(0.0703)
Sales growth	0.0021	-0.0113***	0.0017	0.0001
	(0.0108)	(0.0014)	(0.0021)	(0.0017)
Return on assets	-1.5585**	0.1246	-0.1112	-0.1761
	(0.6919)	(0.1136)	(0.1088)	(0.1093)
Stock return	-0.0140	0.0290	0.0012	0.0052
	(0.2134)	(0.0291)	(0.0346)	(0.0341)
Industry concentration	-1.9864*	-0.0025	-0.1394	-0.2422
	(1.1487)	(0.1149)	(0.1792)	(0.1599)

Table 8 (continued)

	Two stage least squares regression			
	First stage	**First stage**	**Second stage**	**Reduced form**
Explanatory variables	**G-index (1)**	**Initial premium (2)**	**Post-bid resistance = 1 (3)**	**Post-bid resistance = 1 (4)**
Cash offer = 1	-0.0896	-0.0117	0.0941***	0.0878***
	(0.1610)	(0.0195)	(0.0279)	(0.0260)
Constant	-0.6631	0.3745***	-0.5405***	-0.5297***
	(1.2434)	(0.1340)	(0.1951)	(0.1803)
Chi^2-statistic overall		52.9***		
F-statistic overall				4.4***
R^2-statistic overall				4.9%
F-statistic IPO peers G-index/ HQ peers G-index		22.1		
R^2-statistic IPO-peers G-index/ HQ-peers G-index		6.5%		
F-statistic pre-run-up price to 52-week-high price		28.1		
R^2-statistic pre-run-up price to 52-week-high price		9.7%		
Chi^2-statistic no over-identification		0.0		
Chi^2-statistic exogeneity		7.7**		
Obs		954		954

Table 9

Multivariate results for initial premium and the decision to use post-bid resistance: effect of unexplained component of initial premium

Columns (1) and (2) and Columns (3) and (4) present the results from two, two stage least squares (2SLS) regressions for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Columns (1) and (3) present the first stage results for instrumenting the G-index. Columns (2) and (4) present the second stage results for the effect of instrumenting for the G-index. First and second stage diagnostic test results are presented at the base of the regressions. The sample is described in Table 2. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 as an exogenous estimate of private information held by the initial bidder, and the residual from an ordinary least squares regression that is identical to the first stage for instrumenting the initial premium in Column (2) of Table 8 as the unexplained component of initial premium. The second 2SLS regression also includes the initial premium. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below coefficients. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two stage least squares regression		**Two stage least squares regression**	
	First stage	**Second stage**	**First stage**	**Second stage**
	G-index	**Post-bid resistance = 1**	**G-index**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index		0.0504**		0.0520**
		(0.0209)		(0.0213)
IPO-peers G-index	0.5633***		0.5590***	
	(0.0750)		(0.0751)	
HQ-peers G-index	0.2345**		0.2237**	
	(0.1108)		(0.1110)	
Initial premium			-1.1088	0.1492
			(0.8143)	(0.1406)
Unexplained component of initial premium	0.2526	-0.1596***	1.3614	-0.3092**
	(0.2864)	(0.0448)	(0.8540)	(0.1506)
Inverse Mills ratio	0.9712**	0.1369*	1.0151**	0.1304
	(0.4775)	(0.0798)	(0.4807)	(0.0803)
ln(Size)	0.2319***	-0.0136	0.2095***	-0.0112
	(0.0777)	(0.0131)	(0.0810)	(0.0131)
Leverage	0.9616*	-0.0086	1.1380**	-0.0333
	(0.5097)	(0.0813)	(0.5211)	(0.0836)
Market value to book value	-0.1240	-0.0214	-0.1349	-0.0199
	(0.0927)	(0.0154)	(0.0925)	(0.0155)
Tangibility	-0.1533	0.0505	-0.2376	0.0622*
	(0.2313)	(0.0348)	(0.2397)	(0.0368)
Liquidity	-0.7673*	-0.0625	-0.8139*	-0.0553
	(0.4633)	(0.0757)	(0.4636)	(0.0766)
Sales growth	-0.0008	0.0004	-0.0104	0.0017
	(0.0104)	(0.0016)	(0.0123)	(0.0020)
Return on assets	-1.4020**	-0.1175	-1.4203**	-0.1112
	(0.6810)	(0.1102)	(0.6821)	(0.1098)
Stock return	0.1111	-0.0110	0.0181	0.0012
	(0.2009)	(0.0322)	(0.2060)	(0.0334)
Industry concentration	-1.9031*	-0.1536	-1.9892*	-0.1394
	(1.1365)	(0.1739)	(1.1432)	(0.1760)

Table 9 (continued)

	Two stage least squares regression		Two stage least squares regression	
	First stage	Second stage	First stage	Second stage
	G-index	Post-bid resistance = 1	G-index	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Cash offer = 1	-0.0777	0.0907***	-0.1026	0.0941***
	(0.1605)	(0.0266)	(0.1622)	(0.0272)
Constant	-0.9533	-0.4530***	-0.2478	-0.5405***
	(1.2086)	(0.1577)	(1.3621)	(0.1904)
Chi^2-statistic overall		66.9***		66.9***
F-statistic IPO peers G-index/ HQ peers G-index		31.7		30.8
R^2-statistic IPO-peers G-index/ HQ-peers G-index		6.4%		6.2%
Chi^2-statistic no over-identification		0.0		0.0
Chi^2-statistic exogeneity		5.3**		5.5**
Obs		954		954

Table 10

Univariate results for effect of the decision to use post-bid resistance

This table presents descriptive statistics for the dependent variables for effect of the decision to use post-bid resistance. Columns (1)-(3) and Columns (4)-(5) present mean, standard deviation, and observations for the dependent variables for takeover targets that do and do not use post-bid resistance, respectively. The sample is described in Table 2. Target termination fee equals one (zero) for takeover targets that agree (do not agree) to pay a termination fee at any time during a bid based on flags from the Securities Data Company (SDC) database. Final premium equals the proportionate difference between the final offer price and the pre-run-up price of the takeover target. The final offer price is from the SDC database, and the pre-run-up price is the stock price of the takeover target sixty-four trading days before bid announcement from the Center for Research in Security Prices and Compustat Merged (CCM) database. Final premium is winsorized at the fifth and ninety-fifth percentiles. Bid completion equals one (zero) for takeover targets for which a bid is (is not) completed based on flags from the SDC database. Overall return equals the value weighted market adjusted return to the takeover target from sixty-three trading days before bid announcement to bid completion or one year after an uncompleted bid. The returns are from the CCM database. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively, of differences in the means.

	Takeover targets that use post-bid resistance			**Takeover targets that do not use post-bid resistance**		
	Mean	**Std dev.**	**Obs**	**Mean**	**Std dev.**	**Obs**
Dependent variable	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Outcomes						
Target termination fee = 1	0.503***		173	0.876		822
Final premium	0.467	0.315	173	0.429	0.299	822
Bid completion = 1	0.642***		173	0.946		822
Overall return	0.181***	0.549	170	0.270	0.319	815

Table 11

Multivariate results for effect of the decision to use post-bid resistance

Column (1) presents the results from a probit regression for effect of the decision to use post-bid resistance on the use of a target termination fee. Column (2) presents the results from an ordinary least squares (OLS) regression for effect of the decision to use post-bid resistance on the final premium. Column (3) presents the results from a probit regression for effect of the decision to use post-bid resistance on bid completion. Column (4) presents the results from an OLS regression for effect of the decision to use post-bid resistance on the overall return to the takeover target. The sample is described in Table 2. The dependent variables are described in Table 10. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables also include the instrumental variables for the G-index (IPO-peers G-index/ HQ-peers G-index) and initial premium (pre-run-up price to 52-week-high price), and the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (OLS) regressions. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Ordinary least squares regression**	**Probit regression**	**Ordinary least squares regression**
	Target termination fee = 1		**Bid completion = 1**	
Explanatory variables	**(1)**	**Final premium (2)**	**(3)**	**Overall return (4)**
Post-bid resistance = 1	-0.3689***	0.0274	-0.3170***	-0.1048**
	(0.0416)	(0.0253)	(0.0386)	(0.0453)
IPO-peers G-index	-0.0090	0.0056	0.0023	0.0048
	(0.0120)	(0.0086)	(0.0088)	(0.0107)
HQ-peers G-index	0.0076	0.0096	-0.0068	-0.0124
	(0.0128)	(0.0108)	(0.0103)	(0.0120)
Pre-run-up price to 52-week-high price	0.0741	-0.5544***	0.0879*	-0.3692***
	(0.0664)	(0.0585)	(0.0510)	(0.0717)
Inverse Mills ratio	-0.1962***	-0.0453	-0.0179	0.0139
	(0.0681)	(0.0593)	(0.0509)	(0.0689)
ln(Size)	0.0301**	0.0003	-0.0101	-0.0046
	(0.0118)	(0.0099)	(0.0081)	(0.0115)
Leverage	0.0257	0.1393**	-0.0333	0.0642
	(0.0798)	(0.0598)	(0.0570)	(0.0923)
Market value to book value	0.0268*	-0.0106	0.0143	-0.0158
	(0.0151)	(0.0117)	(0.0123)	(0.0135)
Tangibility	0.0047	-0.0727***	0.0413	-0.0148
	(0.0342)	(0.0265)	(0.0275)	(0.0413)
Liquidity	0.0535	-0.0206	0.0386	-0.0087
	(0.0706)	(0.0610)	(0.0507)	(0.0785)
Sales growth	0.0010	-0.0093***	0.0014	-0.0129***
	(0.0028)	(0.0014)	(0.0020)	(0.0018)
Return on assets	0.0795	0.0947	-0.0165	0.3188*
	(0.1167)	(0.1104)	(0.0849)	(0.1802)
Stock return	0.0130	0.0301	-0.0172	0.0193
	(0.0308)	(0.0287)	(0.0234)	(0.0383)
Industry concentration	-0.3503**	0.0119	0.1381	-0.0938
	(0.1521)	(0.1189)	(0.1472)	(0.1437)
Cash offer = 1	-0.0110	-0.0316	-0.0379**	-0.0216
	(0.0247)	(0.0196)	(0.0193)	(0.0274)

Table 11 (continued)

	Probit regression	Ordinary least squares regression	Probit regression	Ordinary least squares regression
	Target termination fee = 1	Final premium	Bid completion = 1	Overall return
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Tender offer = 1	0.0448*	0.1365***	0.1166***	0.1487***
	(0.0255)	(0.0212)	(0.0142)	(0.0269)
Constant	0.8111***	0.2548*	0.8930***	0.2265
	(0.0115)	(0.1343)	(0.0088)	(0.1650)
Chi^2-statistic overall	136.0***		155.5***	
R^2-statistic pseudo	15.2%		23.7%	
F-statistic overall		13.0***		18.4***
R^2-statistic overall		17.7%		8.2%
Obs	954	954	954	946

INTERNET APPENDIX

To Accompany

Public Takeover Bid Resistance: Board Discretion, Antitakeover Provisions, and Initial Bid Premium

Nicholas F. Carline, Sridhar Gogineni, and Pradeep K. Yadav

Contents

Table IA.1: This table is parallel to Table 4 in the paper. However, instead of presenting the results produced from linear probability regressions, Table IA.1 presents the results produced from (probit) regressions specifically intended for a limited dependent variable.

Table IA.2: This table is parallel to Table 5 in the paper. However, instead of presenting the two stage results produced from a linear probability regression, Table IA.2 presents the two stage results produced from a (probit) regression specifically intended for a limited dependent variable.

Table IA.3: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with rolling instrumental variables, Table IA.3 presents the results produced with fixed instrumental variables.

Table IA.4: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the Gompers, Ishii, and Metrick (2003) G-index in index form, Table IA.4 presents the results produced with the G-index in dummy form.

Table IA.5: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the G-index and its instrumental variables in complete form, Table IA.5 presents the results produced with the G-index and its instrumental variables in partial form by not counting the six antitakeover provisions set apart for the Bebchuk, Cohen, and Ferrell (2009) E-index.

Table IA.6: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the G-index and its instrumental variables in complete form, Table IA.6 presents the results produced with the G-index and its instrumental variables in partial form by only counting the six antitakeover provisions set apart for the E-index.

Table IA.7: This table is parallel to Table 8 in the paper. However, instead of presenting the results produced with the initial premium and its instrumental variable incorporating a pre-run-up price sixty-four trading days before bid announcement, Table IA.7 presents the results produced with the initial premium and its instrumental variable incorporating a pre-run-up price one-hundred-and-six trading days before bid announcement.

Table IA.1

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index

Column (1) presents the results from a probit regression for the effect of the non-instrumented G-index on the decision to use post-bid resistance. Columns (2)-(4) present the results from a two-stage probit regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. A second stage diagnostic test result is presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables are described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Robust standard errors are presented in parentheses below average marginal effects. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage probit regression**		
		First stage	**Second stage**	**Reduced form**
	Post-bid resistance = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index	0.0066		0.0559***	
	(0.0045)		(0.0179)	
IPO-peers G-index		0.5944***		0.0328***
		(0.0729)		(0.0110)
HQ-peers G-index		0.2807***		0.0166
		(0.1061)		(0.0131)
Initial premium	-0.1320***	0.1355	-0.1272***	-0.1261***
	(0.0428)	(0.2711)	(0.0427)	(0.0426)
ln(Size)	0.0169*	0.3269***	0.0115	0.0129
	(0.0101)	(0.0644)	(0.0116)	(0.0100)
Leverage	0.0386	0.6903	0.0182	0.0206
	(0.0747)	(0.4950)	(0.0753)	(0.0742)
Market value to book value	-0.0324	-0.0778	-0.0239	-0.0239
	(0.0213)	(0.0895)	(0.0195)	(0.0192)
Tangibility	0.0410	-0.1092	0.0309	0.0305
	(0.0313)	(0.2318)	(0.0315)	(0.0316)
Liquidity	-0.0644	-0.5030	-0.0678	-0.0695
	(0.0680)	(0.4510)	(0.0680)	(0.0675)
Sales growth	-0.1006**	-0.0078	-0.1054**	-0.1047**
	(0.0510)	(0.0104)	(0.0530)	(0.0527)
Return on assets	-0.0940	-1.4596**	-0.1364	-0.1455
	(0.1108)	(0.6786)	(0.1098)	(0.1126)
Stock return	0.0157	0.2418	0.0161	0.0170
	(0.0312)	(0.1951)	(0.0316)	(0.0314)
Industry concentration	-0.2140	-1.4264	-0.1567	-0.1585
	(0.1786)	(1.1191)	(0.1784)	(0.1762)
Cash offer = 1	0.0804***	-0.0750	0.0846***	0.0840***
	(0.0256)	(0.1601)	(0.0254)	(0.0254)
Constant	0.1743***	-0.5318	0.1707***	0.1708***
	(0.0119)	(1.1932)	(0.0220)	(0.0118)
Chi^2-statistic overall	42.0***	79.2***		54.9***
R^2-statistic pseudo	5.1%			6.2%
Chi^2-statistic exogeneity		8.7***		
Obs	975	954		954

Table IA.2

Multivariate results for G-index and the decision to use post-bid resistance: effect of private information held by the initial bidder

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index/ HQ-peers G-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. Columns (2)-(4) present the results from a two-stage probit regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. A second stage diagnostic test result is presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects for the probit (two stage probit) regression. $^{***, **, *}$ indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage probit regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0474**	
			(0.0195)	
IPO-peers G-index	-0.0033**	0.5651***		0.0275**
	(0.0014)	(0.0737)		(0.0112)
HQ-peers G-index	-0.0044***	0.2316**		0.0089
	(0.0016)	(0.1096)		(0.0135)
Initial premium		0.1221	-0.1337***	-0.1333***
		(0.2708)	(0.0420)	(0.0420)
California incorporation = 1	0.0396***			
	(0.0121)			
Inverse Mills ratio		0.9698**	0.1827**	0.1866***
		(0.4751)	(0.0722)	(0.0676)
ln(Size)	-0.0104***	0.2337***	-0.0061	-0.0056
	(0.0012)	(0.0774)	(0.0117)	(0.0112)
Leverage	0.0215**	0.9443*	0.0687	0.0726
	(0.0102)	(0.5101)	(0.0771)	(0.0746)
Market value to book value	-0.0080***	-0.1233	-0.0306	-0.0312
	(0.0017)	(0.0918)	(0.0195)	(0.0190)
Tangibility	-0.0051	-0.1438	0.0252	0.0250
	(0.0044)	(0.2317)	(0.0315)	(0.0316)
Liquidity	-0.0328***	-0.7634*	-0.1173*	-0.1200*
	(0.0089)	(0.4603)	(0.0707)	(0.0687)
Sales growth	0.0017	0.0002	-0.0908*	-0.0907*
	(0.0012)	(0.0107)	(0.0515)	(0.0513)
Return on assets	-0.0154	-1.3943**	-0.1445	-0.1482
	(0.0153)	(0.6761)	(0.1061)	(0.1086)
Stock return	-0.0030	0.1208	-0.0072	-0.0068
	(0.0035)	(0.2018)	(0.0317)	(0.0318)
Industry concentration	-0.0588***	-1.8953*	-0.2584	-0.2609
	(0.0192)	(0.1311)	(0.1823)	(0.1781)

Table IA.2 (continued)

	Probit regression	Two stage probit regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Cash offer = 1		-0.0752	0.0847***	0.0841***
		(0.1595)	(0.0252)	(0.0252)
Constant	0.0460***	-1.0091	0.1708***	0.1708***
	(0.0014)	(1.2203)	(0.0213)	(0.0118)
Chi^2-statistic overall	365.2***		77.7***	59.6***
R^2-statistic pseudo	4.9%			7.0%
Chi^2-statistic exogeneity			5.2**	
Obs	20,717		954	954

Table IA.3

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index with fixed instrumental variables

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index (fixed)/ HQ-peers G-index (fixed)), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. The fixed instrumental variables are equivalent to the rolling instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for being constructed from the earliest available component G-index data in the RiskMetrics dataset. Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0429**	
			(0.0190)	
IPO-peers G-index (fixed)	-0.0040***	0.6376***		0.0254**
	(0.0015)	(0.0829)		(0.0128)
HQ-peers G-index (fixed)	-0.0038**	0.3160***		0.0188
	(0.0018)	(0.1023)		(0.0156)
Initial premium		0.1468	-0.1293***	-0.1225***
		(0.2724)	(0.0411)	(0.0398)
California incorporation = 1	0.0397***			
	(0.0121)			
Inverse Mills ratio		0.9532**	0.1502*	0.1883***
		(0.4716)	(0.0788)	(0.0711)
ln(Size)	-0.0102***	0.2252***	-0.0141	-0.0039
	(0.0012)	(0.0768)	(0.0129)	(0.0120)
Leverage	0.0213**	0.9083*	0.0191	0.0554
	(0.0102)	(0.5105)	(0.0801)	(0.0745)
Market value to book value	-0.0080***	-0.1138	-0.0240	-0.0285**
	(0.0017)	(0.0918)	(0.0151)	(0.0140)
Tangibility	-0.0050	-0.2075	0.0406	0.0317
	(0.0044)	(0.2300)	(0.0346)	(0.0337)
Liquidity	-0.0324***	-0.8400*	-0.0743	-0.1087
	(0.0089)	(0.4633)	(0.0744)	(0.0698)
Sales growth	0.0016	0.0061	-0.0008	-0.0005
	(0.0012)	(0.0106)	(0.0017)	(0.0017)
Return on assets	-0.0167	-1.5254**	-0.1272	-0.1977*
	(0.0152)	(0.6690)	(0.1093)	(0.1087)
Stock return	-0.0030	0.1642	-0.0205	-0.0129
	(0.0035)	(0.2034)	(0.0320)	(0.0317)

Table IA.3 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0590***	-1.8840*	-0.1799	-0.2602
	(0.0192)	(1.1079)	(0.1704)	(0.1595)
Cash offer = 1		-0.0849	0.0872***	0.0838***
		(0.1601)	(0.0264)	(0.0257)
Constant	0.0460***	-2.2618*	-0.3449**	-0.4701**
	(0.0014)	(1.1642)	(0.1510)	(0.1825)
Chi^2-statistic overall	364.5***	66.1***		
R^2-statistic pseudo	4.9%			
F-statistic overall				5.1***
R^2-statistic overall				5.7%
F-statistic IPO peers G-index (fixed)/ HQ peers G-index (fixed)		37.2		
R^2-statistic IPO-peers G-index (fixed)/ HQ-peers G-index (fixed)		7.3%		
Chi^2-statistic no over-identification		0.1		
Chi^2-statistic exogeneity		4.5**		
Obs	20,717	954		954

Table IA.4

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in dummy form

Columns (1) and (2) present the results from a two-equation probit regression for the effect of instrumenting for the G-index in dummy form on the decision to use post-bid resistance. Column (1) presents the first equation results for instrumenting the G-index in dummy form. Column (2) presents the second equation results for the effect of instrumenting for the G-index in dummy form. A second equation diagnostic test result is presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. G-index in dummy form equals one (zero) for firms each year with a G-index in excess (not in excess) of the median G-index for all firms in that year. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 in the paper as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below average marginal effects. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two equation probit regression	
	First equation	**Second equation**
	G-index = 1	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**
G-index = 1		0.2655***
		(0.0934)
IPO-peers G-index	0.0943***	
	(0.0135)	
HQ-peers G-index	0.0442**	
	(0.0176)	
Initial premium	0.0407	-0.1378***
	(0.0521)	(0.0416)
Inverse Mills ratio	0.0517	0.1716***
	(0.0889)	(0.0664)
ln(Size)	0.0383**	-0.0149
	(0.0151)	(0.0114)
Leverage	0.1195	0.0401
	(0.0998)	(0.0759)
Market value to book value	-0.0013	-0.0304
	(0.0177)	(0.0188)
Tangibility	0.0308	0.0156
	(0.0428)	(0.0320)
Liquidity	-0.0455	-0.1061
	(0.0929)	(0.0685)
Sales growth	-0.0080	-0.0842*
	(0.0082)	(0.0489)
Return on assets	-0.2016	-0.1004
	(0.1391)	(0.1029)
Stock return	0.0400	-0.0162
	(0.0393)	(0.0311)
Industry concentration	0.0457	-0.2600
	(0.2034)	(0.1711)
Cash offer = 1	0.0005	0.0813***
	(0.0320)	(0.0254)
Constant	0.4161***	0.2121***
	(0.0151)	(0.0291)

Table IA.4 (continued)

	Two equation probit regression	
	First equation	**Second equation**
	G-index = 1	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**
Chi^2-statistic overall	227.7***	
Chi^2-statistic exogeneity	6.1**	
Obs	954	

Table IA.5

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in partial form – O-index

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target in a given year. The explanatory variables include the instrumental variables for the G-index in partial form (IPO-peers O-index/ HQ-peers O-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. G-index in partial form (O-index) and the instrumental variables are identically constructed to the G-index and instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for not counting the six antitakeover provisions set apart by Bebchuk, Cohen, and Ferrell (2009). Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the O-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the O-index. Column (3) presents the second stage results for the effect of instrumenting for the O-index. Column (4) presents the reduced form results for the effect of instrumenting for the O-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**O-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
O-index			0.0729***	
			(0.0259)	
IPO-peers O-index	-0.0041**	0.6102***		0.0422***
	(0.0018)	(0.0703)		(0.0158)
HQ-peers O-index	-0.0051**	0.2078**		0.0228
	(0.0023)	(0.0980)		(0.0184)
Initial premium		-0.1302	-0.1159***	-0.1257***
		(0.1973)	(0.0422)	(0.0399)
California incorporation = 1	0.0413***			
	(0.0122)			
Inverse Mills ratio		0.8530**	0.1323*	0.1907***
		(0.3320)	(0.0779)	(0.0701)
ln(Size)	-0.0103***	0.1854***	-0.0194	-0.0052
	(0.0012)	(0.0554)	(0.0135)	(0.0120)
Leverage	0.0211**	0.3535	0.0368	0.0604
	(0.0102)	(0.3675)	(0.0792)	(0.0742)
Market value to book value	-0.0078***	-0.0093	-0.0290**	-0.0292**
	(0.0017)	(0.0654)	(0.0147)	(0.0137)
Tangibility	-0.0053	-0.1067	0.0377	0.0297
	(0.0044)	(0.1593)	(0.0357)	(0.0337)
Liquidity	-0.0325***	-0.4642	-0.0732	-0.1056
	(0.0089)	(0.3338)	(0.0751)	(0.0697)
Sales growth	0.0017	0.0076	-0.0010	-0.0003
	(0.0012)	(0.0077)	(0.0018)	(0.0017)
Return on assets	-0.0178	-1.4290***	-0.0919	-0.2027*
	(0.0153)	(0.4919)	(0.1155)	(0.1094)
Stock return	-0.0031	0.1073	-0.0230	-0.0146
	(0.0035)	(0.1441)	(0.0330)	(0.0317)

Table IA.5 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	O-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0589***	-1.6127**	-0.1416	-0.2573
	(0.0193)	(0.7066)	(0.1704)	(0.1603)
Cash offer = 1		-0.0559	0.0920***	0.0884***
		(0.1150)	(0.0268)	(0.0256)
Constant	0.0460***	-1.3023	-0.3752**	-0.5029***
	(0.0015)	(0.8454)	(0.1513)	(0.1739)
Chi^2-statistic overall	361.8***	64.7***		
R^2-statistic pseudo	4.9%			
F-statistic overall				5.4***
R^2-statistic overall				6.1%
F-statistic IPO peers O-index/ HQ peers O-index		42.4		
R^2-statistic IPO-peers O-index/ HQ-peers O-index		8.2%		
Chi^2-statistic no over-identification		0.2		
Chi^2-statistic exogeneity		8.3***		
Obs	20,717	954		954

Table IA.6

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in partial form – E-index

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index in partial form (IPO-peers E-index/ HQ-peers E-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. G-index in partial form (E-index) and the instrumental variables are identically constructed to the G-index and instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for only counting the six antitakeover provisions set apart by Bebchuk, Cohen, and Ferrell (2009). Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the E-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the E-index. Column (3) presents the second stage results for the effect of instrumenting for the E-index. Column (4) presents the reduced form results for the effect of instrumenting for the E-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**E-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
E-index			0.0098	
			(0.0623)	
IPO-peers E-index	-0.0090**	0.2855***		0.0243
	(0.0041)	(0.1056)		(0.0328)
HQ-peers E-index	-0.0083**	0.3985***		-0.0097
	(0.0034)	(0.1066)		(0.0309)
Initial premium		0.2698*	-0.1283***	-0.1270***
		(0.1379)	(0.0419)	(0.0400)
California incorporation = 1	0.0415***			
	(0.0123)			
Inverse Mills ratio		0.0884	0.2059***	0.2047***
		(0.2415)	(0.0725)	(0.0712)
ln(Size)	-0.0108***	0.0536	-0.0036	-0.0035
	(0.0012)	(0.0392)	(0.0118)	(0.0120)
Leverage	0.0224**	0.5677**	0.0596	0.0665
	(0.0102)	(0.2627)	(0.0852)	(0.0741)
Market value to book value	-0.0079***	-0.1107***	-0.0303*	-0.0316**
	(0.0017)	(0.0421)	(0.0178)	(0.0143)
Tangibility	-0.0057	-0.0416	0.0430	0.0426
	(0.0044)	(0.1222)	(0.0336)	(0.0338)
Liquidity	-0.0331***	-0.2897	-0.1094	-0.1119
	(0.0089)	(0.2336)	(0.0737)	(0.0703)
Sales growth	0.0017	-0.0050	-0.0010	-0.0013
	(0.0012)	(0.0060)	(0.0018)	(0.0018)
Return on assets	-0.0160	-0.0436	-0.1604	-0.1540
	(0.0153)	(0.3127)	(0.1061)	(0.1092)
Stock return	-0.0033	0.0249	-0.0170	-0.0172
	(0.0035)	(0.0979)	(0.0311)	(0.0315)

Table IA.6 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	E-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0598***	-0.2793	-0.2752*	-0.2756*
	(0.0192)	(0.6560)	(0.1622)	(0.1605)
Cash offer = 1		0.0011	0.0853***	0.0837***
		(0.0834)	(0.0257)	(0.0260)
Constant	0.0461***	0.4185	-0.1428	-0.1494
	(0.0015)	(0.4618)	(0.1636)	(0.1513)
Chi^2-statistic overall	363.7***	60.6***		
R^2-statistic pseudo	4.9%			
F-statistic overall				4.4***
R^2-statistic overall				4.8%
F-statistic IPO peers E-index/ HQ peers E-index		10.8		
R^2-statistic IPO-peers E-index/ HQ-peers E-index		2.5%		
Chi^2-statistic no over-identification		0.6		
Chi^2-statistic exogeneity		0.0		
Obs	20,717	954		954

Table IA.7

Multivariate results for initial premium and the decision to use post-bid resistance: effect of instrumenting for initial premium incorporating a longer run-up

Columns (1)-(4) present the results from a two stage least squares regression for the effects of simultaneously instrumenting for the G-index and initial premium on the decision to use post-bid resistance. Column (1) presents the first stage results for instrumenting the G-index. Column (2) presents the first stage results for instrumenting the initial premium. Column (3) presents the second stage results for the effects of simultaneously instrumenting for the G-index and initial premium. Column (4) presents the reduced form results for the effects of simultaneously instrumenting for the G-index and initial premium. First and second stage diagnostic test results are presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The instrumental variables are IPO-peers G-index/ HQ-peers G-index for the G-index and pre-run-up price to 52-week-high price (longer run-up) for the initial premium. Initial premium (longer run-up) and the instrumental variable are identically constructed to the initial premium and instrumental variable (pre-run-up price to 52-week-high price) described in Table 1 in the paper except for converting to a pre-run-up price one-hundred-and-six trading days before bid announcement. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 in the paper as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below coefficients. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two stage least squares regression			
	First stage	**First stage**	**Second stage**	**Reduced form**
	G-index	**Initial premium (longer run-up)**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0501**	
			(0.0213)	
IPO-peers G-index	0.5501***	0.0146		0.0283**
	(0.0756)	(0.0102)		(0.0120)
HQ-peers G-index	0.2193**	0.0085		0.0128
	(0.1117)	(0.0122)		(0.0142)
Initial premium (longer run-up)			0.0737	
			(0.1285)	
Pre-run-up price to 52-week-high price (longer run-up)	0.7185	-0.5890***		-0.0077
	(0.4564)	(0.0777)		(0.0707)
Inverse Mills ratio	1.0990**	-0.1322*	0.1396*	0.1839**
	(0.4880)	(0.0730)	(0.0792)	(0.0717)
ln(Size)	0.2114***	-0.0016	-0.0123	-0.0016
	(0.0790)	(0.0114)	(0.0134)	(0.0123)
Leverage	0.9986*	0.1368*	-0.0204	0.0391
	(0.5096)	(0.0735)	(0.0873)	(0.0751)
Market value to book value	-0.1281	-0.0051	-0.0208	-0.0275**
	(0.0914)	(0.0142)	(0.0152)	(0.0136)
Tangibility	-0.1609	-0.0732**	0.0563	0.0428
	(0.2320)	(0.0300)	(0.0366)	(0.0332)
Liquidity	-0.7626*	0.0265	-0.0651	-0.1010
	(0.4615)	(0.0722)	(0.0766)	(0.0702)
Sales growth	0.0024	-0.0057***	0.0006	0.0003
	(0.0106)	(0.0020)	(0.0018)	(0.0017)
Return on assets	-1.5885**	0.2268*	-0.1228	-0.1872*
	(0.6912)	(0.1374)	(0.1093)	(0.1081)
Stock return	-0.0490	0.0994***	-0.0086	-0.0036
	(0.2194)	(0.0370)	(0.0329)	(0.0354)

Table IA.7 (continued)

	Two stage least squares regression			
	First stage	**First stage**	**Second stage**	**Reduced form**
	G-index	**Initial premium (longer run-up)**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-1.9431*	0.0834	-0.1581	-0.2488
	(1.1468)	(0.1526)	(0.1754)	(0.1594)
Cash offer = 1	-0.0871	-0.0169	0.0924***	0.0869***
	(0.1606)	(0.0232)	(0.0272)	(0.0258)
Constant	-0.6247	0.3520**	-0.4971***	-0.5089***
	(1.2413)	(0.1555)	(0.1879)	(0.1793)
Chi^2-statistic overall		54.4***		
F-statistic overall				4.4***
R^2-statistic overall				4.9%
F-statistic IPO peers G-index/ HQ peers G-index		22.5		
R^2-statistic IPO-peers G-index/ HQ-peers G-index		6.6%		
F-statistic pre-run-up price to 52-week-high price (longer run-up)		19.5		
R^2-statistic pre-run-up price to 52-week-high price (longer run-up)		8.0%		
Chi^2-statistic no over-identification		0.0		
Chi^2-statistic exogeneity		6.3**		
Obs		954		954

References

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INTERNET APPENDIX

To Accompany

Public Takeover Bid Resistance: Board Discretion, Antitakeover Provisions, and Initial Bid Premium

Nicholas F. Carline, Sridhar Gogineni, and Pradeep K. Yadav

Contents

Table IA.1: This table is parallel to Table 4 in the paper. However, instead of presenting the results produced from linear probability regressions, Table IA.1 presents the results produced from (probit) regressions specifically intended for a limited dependent variable.

Table IA.2: This table is parallel to Table 5 in the paper. However, instead of presenting the two stage results produced from a linear probability regression, Table IA.2 presents the two stage results produced from a (probit) regression specifically intended for a limited dependent variable.

Table IA.3: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with rolling instrumental variables, Table IA.3 presents the results produced with fixed instrumental variables.

Table IA.4: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the Gompers, Ishii, and Metrick (2003) G-index in index form, Table IA.4 presents the results produced with the G-index in dummy form.

Table IA.5: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the G-index and its instrumental variables in complete form, Table IA.5 presents the results produced with the G-index and its instrumental variables in partial form by not counting the six antitakeover provisions set apart for the Bebchuk, Cohen, and Ferrell (2009) E-index.

Table IA.6: This table is parallel to Table 5 in the paper. However, instead of presenting the results produced with the G-index and its instrumental variables in complete form, Table IA.6 presents the results produced with the G-index and its instrumental variables in partial form by only counting the six antitakeover provisions set apart for the E-index.

Table IA.7: This table is parallel to Table 8 in the paper. However, instead of presenting the results produced with the initial premium and its instrumental variable incorporating a pre-run-up price sixty-four trading days before bid announcement, Table IA.7 presents the results produced with the initial premium and its instrumental variable incorporating a pre-run-up price one-hundred-and-six trading days before bid announcement.

Table IA.1

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index

Column (1) presents the results from a probit regression for the effect of the non-instrumented G-index on the decision to use post-bid resistance. Columns (2)-(4) present the results from a two-stage probit regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. A second stage diagnostic test result is presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables are described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Robust standard errors are presented in parentheses below average marginal effects. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage probit regression**		
		First stage	**Second stage**	**Reduced form**
	Post-bid resistance = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index	0.0066		0.0559***	
	(0.0045)		(0.0179)	
IPO-peers G-index		0.5944***		0.0328***
		(0.0729)		(0.0110)
HQ-peers G-index		0.2807***		0.0166
		(0.1061)		(0.0131)
Initial premium	-0.1320***	0.1355	-0.1272***	-0.1261***
	(0.0428)	(0.2711)	(0.0427)	(0.0426)
ln(Size)	0.0169*	0.3269***	0.0115	0.0129
	(0.0101)	(0.0644)	(0.0116)	(0.0100)
Leverage	0.0386	0.6903	0.0182	0.0206
	(0.0747)	(0.4950)	(0.0753)	(0.0742)
Market value to book value	-0.0324	-0.0778	-0.0239	-0.0239
	(0.0213)	(0.0895)	(0.0195)	(0.0192)
Tangibility	0.0410	-0.1092	0.0309	0.0305
	(0.0313)	(0.2318)	(0.0315)	(0.0316)
Liquidity	-0.0644	-0.5030	-0.0678	-0.0695
	(0.0680)	(0.4510)	(0.0680)	(0.0675)
Sales growth	-0.1006**	-0.0078	-0.1054**	-0.1047**
	(0.0510)	(0.0104)	(0.0530)	(0.0527)
Return on assets	-0.0940	-1.4596**	-0.1364	-0.1455
	(0.1108)	(0.6786)	(0.1098)	(0.1126)
Stock return	0.0157	0.2418	0.0161	0.0170
	(0.0312)	(0.1951)	(0.0316)	(0.0314)
Industry concentration	-0.2140	-1.4264	-0.1567	-0.1585
	(0.1786)	(1.1191)	(0.1784)	(0.1762)
Cash offer = 1	0.0804***	-0.0750	0.0846***	0.0840***
	(0.0256)	(0.1601)	(0.0254)	(0.0254)
Constant	0.1743***	-0.5318	0.1707***	0.1708***
	(0.0119)	(1.1932)	(0.0220)	(0.0118)
Chi^2-statistic overall	42.0***	79.2***		54.9***
R^2-statistic pseudo	5.1%			6.2%
Chi^2-statistic exogeneity		8.7***		
Obs	975	954		954

Table IA.2

Multivariate results for G-index and the decision to use post-bid resistance: effect of private information held by the initial bidder

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index/ HQ-peers G-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. Columns (2)-(4) present the results from a two-stage probit regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. A second stage diagnostic test result is presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects for the probit (two stage probit) regression. $^{***, **, *}$ indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage probit regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0474**	
			(0.0195)	
IPO-peers G-index	-0.0033**	0.5651***		0.0275**
	(0.0014)	(0.0737)		(0.0112)
HQ-peers G-index	-0.0044***	0.2316**		0.0089
	(0.0016)	(0.1096)		(0.0135)
Initial premium		0.1221	-0.1337***	-0.1333***
		(0.2708)	(0.0420)	(0.0420)
California incorporation = 1	0.0396***			
	(0.0121)			
Inverse Mills ratio		0.9698**	0.1827**	0.1866***
		(0.4751)	(0.0722)	(0.0676)
ln(Size)	-0.0104***	0.2337***	-0.0061	-0.0056
	(0.0012)	(0.0774)	(0.0117)	(0.0112)
Leverage	0.0215**	0.9443*	0.0687	0.0726
	(0.0102)	(0.5101)	(0.0771)	(0.0746)
Market value to book value	-0.0080***	-0.1233	-0.0306	-0.0312
	(0.0017)	(0.0918)	(0.0195)	(0.0190)
Tangibility	-0.0051	-0.1438	0.0252	0.0250
	(0.0044)	(0.2317)	(0.0315)	(0.0316)
Liquidity	-0.0328***	-0.7634*	-0.1173*	-0.1200*
	(0.0089)	(0.4603)	(0.0707)	(0.0687)
Sales growth	0.0017	0.0002	-0.0908*	-0.0907*
	(0.0012)	(0.0107)	(0.0515)	(0.0513)
Return on assets	-0.0154	-1.3943**	-0.1445	-0.1482
	(0.0153)	(0.6761)	(0.1061)	(0.1086)
Stock return	-0.0030	0.1208	-0.0072	-0.0068
	(0.0035)	(0.2018)	(0.0317)	(0.0318)
Industry concentration	-0.0588***	-1.8953*	-0.2584	-0.2609
	(0.0192)	(1.1311)	(0.1823)	(0.1781)

Table IA.2 (continued)

	Probit regression	Two stage probit regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Cash offer = 1		-0.0752	0.0847***	0.0841***
		(0.1595)	(0.0252)	(0.0252)
Constant	0.0460***	-1.0091	0.1708***	0.1708***
	(0.0014)	(1.2203)	(0.0213)	(0.0118)
Chi^2-statistic overall	365.2***		77.7***	59.6***
R^2-statistic pseudo	4.9%			7.0%
Chi^2-statistic exogeneity			5.2**	
Obs	20,717		954	954

Table IA.3

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index with fixed instrumental variables

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index (IPO-peers G-index (fixed)/ HQ-peers G-index (fixed)), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. The fixed instrumental variables are equivalent to the rolling instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for being constructed from the earliest available component G-index data in the RiskMetrics dataset. Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the G-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the G-index. Column (3) presents the second stage results for the effect of instrumenting for the G-index. Column (4) presents the reduced form results for the effect of instrumenting for the G-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**G-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0429**	
			(0.0190)	
IPO-peers G-index (fixed)	-0.0040***	0.6376***		0.0254**
	(0.0015)	(0.0829)		(0.0128)
HQ-peers G-index (fixed)	-0.0038**	0.3160***		0.0188
	(0.0018)	(0.1023)		(0.0156)
Initial premium		0.1468	-0.1293***	-0.1225***
		(0.2724)	(0.0411)	(0.0398)
California incorporation = 1	0.0397***			
	(0.0121)			
Inverse Mills ratio		0.9532**	0.1502*	0.1883***
		(0.4716)	(0.0788)	(0.0711)
ln(Size)	-0.0102***	0.2252***	-0.0141	-0.0039
	(0.0012)	(0.0768)	(0.0129)	(0.0120)
Leverage	0.0213**	0.9083*	0.0191	0.0554
	(0.0102)	(0.5105)	(0.0801)	(0.0745)
Market value to book value	-0.0080***	-0.1138	-0.0240	-0.0285**
	(0.0017)	(0.0918)	(0.0151)	(0.0140)
Tangibility	-0.0050	-0.2075	0.0406	0.0317
	(0.0044)	(0.2300)	(0.0346)	(0.0337)
Liquidity	-0.0324***	-0.8400*	-0.0743	-0.1087
	(0.0089)	(0.4633)	(0.0744)	(0.0698)
Sales growth	0.0016	0.0061	-0.0008	-0.0005
	(0.0012)	(0.0106)	(0.0017)	(0.0017)
Return on assets	-0.0167	-1.5254**	-0.1272	-0.1977*
	(0.0152)	(0.6690)	(0.1093)	(0.1087)
Stock return	-0.0030	0.1642	-0.0205	-0.0129
	(0.0035)	(0.2034)	(0.0320)	(0.0317)

Table IA.3 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	G-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0590***	-1.8840*	-0.1799	-0.2602
	(0.0192)	(1.1079)	(0.1704)	(0.1595)
Cash offer = 1		-0.0849	0.0872***	0.0838***
		(0.1601)	(0.0264)	(0.0257)
Constant	0.0460***	-2.2618*	-0.3449**	-0.4701**
	(0.0014)	(1.1642)	(0.1510)	(0.1825)
Chi^2-statistic overall	364.5***	66.1***		
R^2-statistic pseudo	4.9%			
F-statistic overall				5.1***
R^2-statistic overall				5.7%
F-statistic IPO peers G-index (fixed)/ HQ peers G-index (fixed)		37.2		
R^2-statistic IPO-peers G-index (fixed)/ HQ-peers G-index (fixed)		7.3%		
Chi^2-statistic no over-identification		0.1		
Chi^2-statistic exogeneity		4.5**		
Obs	20,717	954		954

Table IA.4

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in dummy form

Columns (1) and (2) present the results from a two-equation probit regression for the effect of instrumenting for the G-index in dummy form on the decision to use post-bid resistance. Column (1) presents the first equation results for instrumenting the G-index in dummy form. Column (2) presents the second equation results for the effect of instrumenting for the G-index in dummy form. A second equation diagnostic test result is presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. G-index in dummy form equals one (zero) for firms each year with a G-index in excess (not in excess) of the median G-index for all firms in that year. The instrumental variables are IPO-peers G-index/ HQ-peers G-index. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 in the paper as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1 in the paper. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below average marginal effects. $^{***, **, *}$ indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two equation probit regression	
	First equation	**Second equation**
	G-index = 1	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**
G-index = 1		0.2655***
		(0.0934)
IPO-peers G-index	0.0943***	
	(0.0135)	
HQ-peers G-index	0.0442**	
	(0.0176)	
Initial premium	0.0407	-0.1378***
	(0.0521)	(0.0416)
Inverse Mills ratio	0.0517	0.1716***
	(0.0889)	(0.0664)
ln(Size)	0.0383**	-0.0149
	(0.0151)	(0.0114)
Leverage	0.1195	0.0401
	(0.0998)	(0.0759)
Market value to book value	-0.0013	-0.0304
	(0.0177)	(0.0188)
Tangibility	0.0308	0.0156
	(0.0428)	(0.0320)
Liquidity	-0.0455	-0.1061
	(0.0929)	(0.0685)
Sales growth	-0.0080	-0.0842*
	(0.0082)	(0.0489)
Return on assets	-0.2016	-0.1004
	(0.1391)	(0.1029)
Stock return	0.0400	-0.0162
	(0.0393)	(0.0311)
Industry concentration	0.0457	-0.2600
	(0.2034)	(0.1711)
Cash offer = 1	0.0005	0.0813***
	(0.0320)	(0.0254)
Constant	0.4161***	0.2121***
	(0.0151)	(0.0291)

Table IA.4 (continued)

	Two equation probit regression	
	First equation	**Second equation**
	G-index = 1	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**
Chi^2-statistic overall	227.7***	
Chi^2-statistic exogeneity	6.1**	
Obs	954	

Table IA.5

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in partial form – O-index

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target in a given year. The explanatory variables include the instrumental variables for the G-index in partial form (IPO-peers O-index/ HQ-peers O-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. G-index in partial form (O-index) and the instrumental variables are identically constructed to the G-index and instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for not counting the six antitakeover provisions set apart by Bebchuk, Cohen, and Ferrell (2009). Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the O-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the O-index. Column (3) presents the second stage results for the effect of instrumenting for the O-index. Column (4) presents the reduced form results for the effect of instrumenting for the O-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. $^{***,\ **,\ *}$ indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**O-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
O-index			0.0729***	
			(0.0259)	
IPO-peers O-index	-0.0041**	0.6102***		0.0422***
	(0.0018)	(0.0703)		(0.0158)
HQ-peers O-index	-0.0051**	0.2078**		0.0228
	(0.0023)	(0.0980)		(0.0184)
Initial premium		-0.1302	-0.1159***	-0.1257***
		(0.1973)	(0.0422)	(0.0399)
California incorporation = 1	0.0413***			
	(0.0122)			
Inverse Mills ratio		0.8530**	0.1323*	0.1907***
		(0.3320)	(0.0779)	(0.0701)
ln(Size)	-0.0103***	0.1854***	-0.0194	-0.0052
	(0.0012)	(0.0554)	(0.0135)	(0.0120)
Leverage	0.0211**	0.3535	0.0368	0.0604
	(0.0102)	(0.3675)	(0.0792)	(0.0742)
Market value to book value	-0.0078***	-0.0093	-0.0290**	-0.0292**
	(0.0017)	(0.0654)	(0.0147)	(0.0137)
Tangibility	-0.0053	-0.1067	0.0377	0.0297
	(0.0044)	(0.1593)	(0.0357)	(0.0337)
Liquidity	-0.0325***	-0.4642	-0.0732	-0.1056
	(0.0089)	(0.3338)	(0.0751)	(0.0697)
Sales growth	0.0017	0.0076	-0.0010	-0.0003
	(0.0012)	(0.0077)	(0.0018)	(0.0017)
Return on assets	-0.0178	-1.4290***	-0.0919	-0.2027*
	(0.0153)	(0.4919)	(0.1155)	(0.1094)
Stock return	-0.0031	0.1073	-0.0230	-0.0146
	(0.0035)	(0.1441)	(0.0330)	(0.0317)

Table IA.5 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	O-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0589***	-1.6127**	-0.1416	-0.2573
	(0.0193)	(0.7066)	(0.1704)	(0.1603)
Cash offer = 1		-0.0559	0.0920***	0.0884***
		(0.1150)	(0.0268)	(0.0256)
Constant	0.0460***	-1.3023	-0.3752**	-0.5029***
	(0.0015)	(0.8454)	(0.1513)	(0.1739)
Chi^2-statistic overall	361.8***	64.7***		
R^2-statistic pseudo	4.9%			
F-statistic overall				5.4***
R^2-statistic overall				6.1%
F-statistic IPO peers O-index/ HQ peers O-index		42.4		
R^2-statistic IPO-peers O-index/ HQ-peers O-index		8.2%		
Chi^2-statistic no over-identification		0.2		
Chi^2-statistic exogeneity		8.3***		
Obs	20,717	954		954

Table IA.6

Multivariate results for G-index and the decision to use post-bid resistance: effect of instrumenting for G-index in partial form – E-index

Column (1) presents the results from a probit regression for takeover target selection. Takeover target equals one (zero) for firms selected (not selected) as a takeover target each year. The explanatory variables include the instrumental variables for the G-index in partial form (IPO-peers E-index/ HQ-peers E-index), and California incorporation that equals one (zero) for firms incorporated (not incorporated) in California based on codes from the Center for Research in Security Prices and Compustat Merged (CCM) database. G-index in partial form (E-index) and the instrumental variables are identically constructed to the G-index and instrumental variables (IPO-peers G-index/ HQ-peers G-index) described in Table 1 in the paper except for only counting the six antitakeover provisions set apart by Bebchuk, Cohen, and Ferrell (2009). Columns (2)-(4) present the results from a two stage least squares (2SLS) regression for the effect of instrumenting for the E-index on the decision to use post-bid resistance. Column (2) presents the first stage results for instrumenting the E-index. Column (3) presents the second stage results for the effect of instrumenting for the E-index. Column (4) presents the reduced form results for the effect of instrumenting for the E-index. First and second stage diagnostic test results are presented at the base of the regression. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The explanatory variables exclude California incorporation but include the inverse Mills ratio from the probit regression as an exogenous estimate of private information held by the initial bidder. The sample is described in Table 2 in the paper. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the CCM database. Firm clustered (corrected) standard errors are presented in parentheses below average marginal effects (coefficients) for the probit (2SLS) regression. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Probit regression	**Two stage least squares regression**		
		First stage	**Second stage**	**Reduced form**
	Takeover target = 1	**E-index**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
E-index			0.0098	
			(0.0623)	
IPO-peers E-index	-0.0090**	0.2855***		0.0243
	(0.0041)	(0.1056)		(0.0328)
HQ-peers E-index	-0.0083**	0.3985***		-0.0097
	(0.0034)	(0.1066)		(0.0309)
Initial premium		0.2698*	-0.1283***	-0.1270***
		(0.1379)	(0.0419)	(0.0400)
California incorporation = 1	0.0415***			
	(0.0123)			
Inverse Mills ratio		0.0884	0.2059***	0.2047***
		(0.2415)	(0.0725)	(0.0712)
ln(Size)	-0.0108***	0.0536	-0.0036	-0.0035
	(0.0012)	(0.0392)	(0.0118)	(0.0120)
Leverage	0.0224**	0.5677**	0.0596	0.0665
	(0.0102)	(0.2627)	(0.0852)	(0.0741)
Market value to book value	-0.0079***	-0.1107***	-0.0303*	-0.0316**
	(0.0017)	(0.0421)	(0.0178)	(0.0143)
Tangibility	-0.0057	-0.0416	0.0430	0.0426
	(0.0044)	(0.1222)	(0.0336)	(0.0338)
Liquidity	-0.0331***	-0.2897	-0.1094	-0.1119
	(0.0089)	(0.2336)	(0.0737)	(0.0703)
Sales growth	0.0017	-0.0050	-0.0010	-0.0013
	(0.0012)	(0.0060)	(0.0018)	(0.0018)
Return on assets	-0.0160	-0.0436	-0.1604	-0.1540
	(0.0153)	(0.3127)	(0.1061)	(0.1092)
Stock return	-0.0033	0.0249	-0.0170	-0.0172
	(0.0035)	(0.0979)	(0.0311)	(0.0315)

Table IA.6 (continued)

	Probit regression	Two stage least squares regression		
		First stage	Second stage	Reduced form
	Takeover target = 1	E-index	Post-bid resistance = 1	Post-bid resistance = 1
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-0.0598***	-0.2793	-0.2752*	-0.2756*
	(0.0192)	(0.6560)	(0.1622)	(0.1605)
Cash offer = 1		0.0011	0.0853***	0.0837***
		(0.0834)	(0.0257)	(0.0260)
Constant	0.0461***	0.4185	-0.1428	-0.1494
	(0.0015)	(0.4618)	(0.1636)	(0.1513)
Chi^2-statistic overall	363.7***	60.6***		
R^2-statistic pseudo	4.9%			
F-statistic overall				4.4***
R^2-statistic overall				4.8%
F-statistic IPO peers E-index/ HQ peers E-index		10.8		
R^2-statistic IPO-peers E-index/ HQ-peers E-index		2.5%		
Chi^2-statistic no over-identification		0.6		
Chi^2-statistic exogeneity		0.0		
Obs	20,717	954		954

Table IA.7

Multivariate results for initial premium and the decision to use post-bid resistance: effect of instrumenting for initial premium incorporating a longer run-up

Columns (1)-(4) present the results from a two stage least squares regression for the effects of simultaneously instrumenting for the G-index and initial premium on the decision to use post-bid resistance. Column (1) presents the first stage results for instrumenting the G-index. Column (2) presents the first stage results for instrumenting the initial premium. Column (3) presents the second stage results for the effects of simultaneously instrumenting for the G-index and initial premium. Column (4) presents the reduced form results for the effects of simultaneously instrumenting for the G-index and initial premium. First and second stage diagnostic test results are presented at the base of the regression. The sample is described in Table 2 in the paper. Post-bid resistance equals one (zero) for takeover targets that use (do not use) post-bid resistance. The instrumental variables are IPO-peers G-index/ HQ-peers G-index for the G-index and pre-run-up price to 52-week-high price (longer run-up) for the initial premium. Initial premium (longer run-up) and the instrumental variable are identically constructed to the initial premium and instrumental variable (pre-run-up price to 52-week-high price) described in Table 1 in the paper except for converting to a pre-run-up price one-hundred-and-six trading days before bid announcement. The explanatory variables also include the inverse Mills ratio from the probit regression for takeover target selection in Column (1) of Table 5 in the paper as an exogenous estimate of private information held by the initial bidder. The explanatory variables are also described in Table 1. Industry and year dummies are also included. Industry dummies are based on historic two-digit standard industrial classification codes from the Center for Research in Security Prices and Compustat Merged database. Corrected standard errors are presented in parentheses below coefficients. ***, **, * indicate statistical significance at the one, five, and ten percent levels, respectively.

	Two stage least squares regression			
	First stage	**First stage**	**Second stage**	**Reduced form**
	G-index	**Initial premium (longer run-up)**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
G-index			0.0501**	
			(0.0213)	
IPO-peers G-index	0.5501***	0.0146		0.0283**
	(0.0756)	(0.0102)		(0.0120)
HQ-peers G-index	0.2193**	0.0085		0.0128
	(0.1117)	(0.0122)		(0.0142)
Initial premium (longer run-up)			0.0737	
			(0.1285)	
Pre-run-up price to 52-week-high price (longer run-up)	0.7185	-0.5890***		-0.0077
	(0.4564)	(0.0777)		(0.0707)
Inverse Mills ratio	1.0990**	-0.1322*	0.1396*	0.1839**
	(0.4880)	(0.0730)	(0.0792)	(0.0717)
ln(Size)	0.2114***	-0.0016	-0.0123	-0.0016
	(0.0790)	(0.0114)	(0.0134)	(0.0123)
Leverage	0.9986*	0.1368*	-0.0204	0.0391
	(0.5096)	(0.0735)	(0.0873)	(0.0751)
Market value to book value	-0.1281	-0.0051	-0.0208	-0.0275**
	(0.0914)	(0.0142)	(0.0152)	(0.0136)
Tangibility	-0.1609	-0.0732**	0.0563	0.0428
	(0.2320)	(0.0300)	(0.0366)	(0.0332)
Liquidity	-0.7626*	0.0265	-0.0651	-0.1010
	(0.4615)	(0.0722)	(0.0766)	(0.0702)
Sales growth	0.0024	-0.0057***	0.0006	0.0003
	(0.0106)	(0.0020)	(0.0018)	(0.0017)
Return on assets	-1.5885**	0.2268*	-0.1228	-0.1872*
	(0.6912)	(0.1374)	(0.1093)	(0.1081)
Stock return	-0.0490	0.0994***	-0.0086	-0.0036
	(0.2194)	(0.0370)	(0.0329)	(0.0354)

Table IA.7 (continued)

	Two stage least squares regression			
	First stage	**First stage**	**Second stage**	**Reduced form**
	G-index	**Initial premium (longer run-up)**	**Post-bid resistance = 1**	**Post-bid resistance = 1**
Explanatory variables	**(1)**	**(2)**	**(3)**	**(4)**
Industry concentration	-1.9431*	0.0834	-0.1581	-0.2488
	(1.1468)	(0.1526)	(0.1754)	(0.1594)
Cash offer = 1	-0.0871	-0.0169	0.0924***	0.0869***
	(0.1606)	(0.0232)	(0.0272)	(0.0258)
Constant	-0.6247	0.3520**	-0.4971***	-0.5089***
	(1.2413)	(0.1555)	(0.1879)	(0.1793)
Chi^2-statistic overall		54.4***		
F-statistic overall				4.4***
R^2-statistic overall				4.9%
F-statistic IPO peers G-index/ HQ peers G-index		22.5		
R^2-statistic IPO-peers G-index/ HQ-peers G-index		6.6%		
F-statistic pre-run-up price to 52-week-high price (longer run-up)		19.5		
R^2-statistic pre-run-up price to 52-week-high price (longer run-up)		8.0%		
Chi^2-statistic no over-identification		0.0		
Chi^2-statistic exogeneity		6.3**		
Obs		954		954

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