

Lethality of Managerial Resistance in Hostile Bids

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Abstract

We empirically investigate ‘hostile’ takeover bids by specifically focusing on whether or not the resistance strategy included retaliation with a potentially lethal operational and/or financial transaction intended to frustrate the takeover bid and make it likely to fail. More than 40% of hostile bids in our sample involve such potentially lethal “frustrating” actions. We find that a frustrating action is causally linked to worse abnormal stockholder wealth and greater likelihood of the CEO being fired subsequent to the bid. Moreover, relative to non-lethal managerial resistance, a frustrating action is significantly related to commonly used proxies for lower target-firm undervaluation, lower managerial quality, and tighter managerial control. Our empirical findings are consistent with potentially lethal resistance strategies being motivated more by managerial entrenchment considerations than by the objective of maximizing the potential for price improvement for shareholders.

JEL classification: G34; G38

Keywords: hostile takeover; bid resistance; stockholder wealth; managerial turnover; corporate governance

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1. Introduction

We investigate ‘hostile’ takeover bids by specifically focusing on whether or not the resistance strategy included retaliation with potentially lethal operational actions and/or financial transactions intended to frustrate the takeover bid and make it likely to fail by making the target less attractive and/or more difficult to acquire for the initial bidder. Examples of such potentially lethal actions, hereafter labeled as “frustrating” actions, are described by Ruback (1987), Dann and DeAngelo (1988), and Berkovitch and Khanna (1990); and can include: (a) divestments in which assets of value to the bidder are sought to be sold or spun-off; (b) mergers or joint ventures in which the intent is to make the bid problematic from a size, strategic, or antitrust perspective; (c) large payouts and share buybacks; (d) competing management buyouts; (e) golden parachutes; and (f) ‘white squire’ equity infusions. During the 15 year span of our study, 41 percent of hostile bids involved at least one type of frustrating action.

The resistance strategies used in the remaining 59% of the hostile bids in our sample are not structured to fatally derail the bid and make it likely to fail. Even though the associated resistance can often be quite severe, it does not block all pathways that can enable a bid to succeed. We hereby label these resistance strategies as “non-lethal” managerial resistance. They include actions like: (a) releasing financial and strategic information to aid in justifying and communicating a higher valuation; (b) lobbying relevant stakeholders; (c) soliciting alternative friendly offers; (d) raising antitrust concerns; and (e) undertaking relevant litigation. There are bonafide economic motivations for non-lethal resistance. First, it can secure a better offer price for shareholders by helping to unlock the value of managerial private information that justifies higher valuation, information that may *not* otherwise be reflected in market prices since the information is private. Second, as argued by Ruback (1987), in transactions where there is disagreement about value, it can pay to haggle about price, and it can pay to buy more time to do so, since the additional time can increase the possibility of competing bidders.

For frustrating actions, a bonafide motivation is that a frustrating action represents resistance that is credibly so severe that it can enable managers to extract the maximum possible takeover premium for stockholders (Shleifer and Vishny, 1986a; Stulz, 1988; Berkovitch and Khanna, 1990). However, an alternative motivation is the “managerial entrenchment” view, i.e., managers resort to a frustrating action because they want the failure of *any* offer that leads to their losing their jobs and the associated private benefits of control (Baron, 1983).¹ This paper empirically investigates these conflicting managerial motives for frustrating actions during hostile bids.

First, we examine if and how the actual abnormal stockholder wealth from a hostile bid depends on whether or not the target’s resistance strategy includes a frustrating action. Depending on the stockholders’ belief in regard to the motivation for the frustrating action – optimally maximize the potential for price improvement, or alternatively remain entrenched in their jobs – the abnormal stockholder-wealth effect could arguably be better or worse relative to non-lethal managerial resistance.

Second, we examine whether or not salient initial-offer and target-firm characteristics affect the likelihood that a frustrating action is the target management’s preferred resistance strategy.² We focus on characteristics that proxy for target-firm undervaluation, managerial quality, and managerial control. If a frustrating action is the managers’ preferred strategy for reason of maximizing potential for price improvement, then it should arguably be associated

¹ An insightful illustration of conflicting perspectives is the EUR 26 billion takeover of Arcelor by Mittal Steel, one of the most fiercely and bitterly resisted hostile bids in Europe. Arcelor’s resistance strategy included: (a) vigorous efforts to ring-fence EUR 4 billion of North American assets not wanted by Mittal, thereby making it difficult for Mittal to offload these assets to preempt antitrust concerns; (b) repurchase EUR 5 billion of stock; (c) take-over a rival firm, Severstal, in a EUR 13 billion deal; and (d) provide Severstal’s CEO with a 32 percent blocking stake (equivalent to 38 percent after the stock repurchase). Eventually, the bidder agreeing to Arcelor’s CEO and Board Chair continuing in office after the merger, coupled with a 34 percent improvement on the initial offer, prevented these frustrating actions from ending the hostile bid. Arcelor had to pay a punitive EUR 140 million fee for terminating the Severstal take-over. See: “Mittal Rides Rocky Road to Takeover Arcelor”, Wall Street Journal, June 25, 2006.

² We include these as independent variables elsewhere in the analysis along with variables to indicate whether or not a hostile bid has multiple bidders, and whether or not a hostile bid fails. We also account for unobservable factors (e.g. costs of acquiring information about the target firm and private benefits of managerial control) that increase the likelihood of observing resistance during a takeover bid.

to a greater extent with greater target-firm undervaluation compared to non-lethal managerial resistance. Furthermore, if a frustrating action is the managers' preferred strategy for managerial entrenchment reasons, then it should be associated to a greater extent with lower managerial quality and greater managerial control, relative to non-lethal managerial resistance.

Lastly, we examine if the likelihood of the CEO being fired after a hostile bid, i.e., CEO turnover, depends on whether or not the resistance strategies included a frustrating action. Higher CEO-turnover after a frustrating action (relative to non-lethal managerial resistance) should arguably reflect that the frustrating action was perceived as having been misused for managerial entrenchment. However, the direction of a CEO-turnover effect of a frustrating action should also reflect the strength of adverse information revealed about offending managers interdependently with the effectiveness of internal and external disciplinary mechanisms after a hostile bid (Hirshleifer and Thakor, 1994).

We select the U.K. as the institutional setting for the analysis because of the several important advantages it affords over the US for this specific study. First, it gives us the ability to study the use of a frustrating action in the absence of any confounding effects of *ex ante* deterrent antitakeover provisions like staggered boards, supermajority amendments, fair price amendments, and poison pills. In contrast to the U.S., such provisions are specifically precluded, or discouraged to the point of extinction, in the U.K.³

Second, the U.K. Takeover Code clearly recognizes and defines a frustrating action in the context of a takeover bid, and has special disclosure and approval-related provisions for them, albeit enforced during our sample period only through a self-regulatory framework. This clearly ensures precision in identifying frustrating actions.

Third, another major advantage of the UK as the institutional setting for the study is that it provides us with a useful exogenous event: incorporation of the recommendations of the

³ This is important because these *ex ante* deterrent antitakeover provisions make it more likely to outright deter a takeover bid (Karpoff, Schonlau, and Wehrly, 2017), and also make it more likely to generate managerial resistance during a takeover bid (Carline, Gogineni, and Puthenpurackal, 2019).

Cadbury Report concerning internal corporate-governance practice into the listing requirements of the London Stock Exchange for fiscal periods after June 1993. In particular, the Cadbury reforms made it virtually mandatory for boards of exchange-listed firms to have a minimum number of outside independent directors. This led to a substantial increase in the representation and influence of outside directors (Dahya and McConnell, 2007; Dahya, Golubov, Petmezas, and Travlos, 2016). We exploit the Cadbury reforms as a naturally exogenous source of variation for the likelihood that a frustrating action is managers' preferable resistance strategy. This has strong validity on the basis of the earlier theoretical debate and subsequent empirical analysis. Importantly, this way we are able to make causal inferences about whether or not frustrating actions impact abnormal stockholder wealth from a hostile bid and CEO turnover after a hostile bid (relative to non-lethal managerial resistance).

Contrary to theoretical appraisals by Shleifer and Vishny (1986a), Stulz (1988), and Berkovitch and Khanna (1990), the statistically and materially significant results that we document indicate that, relative to non-lethal managerial resistance, frustrating actions in hostile bids are motivated by managerial entrenchment motivations rather than an effort to maximize the potential for price improvement. Firstly, when measured over the duration of a hostile bid and one year beyond for a failed bid (in the absence of another offer), the abnormal stockholder-wealth effect (measured as the market-adjusted return over the final premium) is 19 percentage-points worse for a frustrating action compared with non-lethal managerial resistance.⁴ Furthermore, our results indicate that stockholders do not foresee, from as early as bid rumors through to bid announcement, the coming of frustrating action; and that the negative

⁴ We use the actual market-adjusted return over the final premium as the measure of actual abnormal stockholder wealth from a hostile bid because, even for a completed bid, stockholders may not be sufficiently convinced that the final offer generates the maximum possible takeover premium. Indeed, from regressing the actual market-adjusted return on the final premium, we find coefficients of 0.70 (0.61) for all hostile bids (only completed bids), both significantly less than one. In further analysis not documented in the paper, we find no significant difference between final premiums for hostile bids differentiated by resistance strategies that do and do not extend to frustrating actions. However, the change in the premium from the initial offer is smaller by a statistically and economically significant 9 percentage points for a hostile bid that faces frustrating action.

average market-adjusted return around the days when a frustrating action is actually announced (documented by Dann and DeAngelo, 1988), substantially understates its wealth-reducing effect for stockholders. Secondly, frustrating action is associated to a lesser extent with common proxies for greater target-firm undervaluation, and to a greater extent with common proxies for lower managerial quality and greater managerial control. Moreover, a hostile bid that faces frustrating action is 34 percentage points less likely to have multiple bidders and, in the absence of other independent variables, 17 percentage points more likely to fail. Lastly, a CEO who retaliates with frustrating action is 27 percentage points more likely to be replaced after a hostile bid (for a failed bid, in the absence of another offer for one year). This result provides support for theoretical findings by Hirshleifer and Thakor (1994) suggesting that adverse information revealed about managers during takeover bids (in our study, through misuse of frustrating action for entrenchment) can lead to an abnormally high turnover rate. For this to occur, it also suggests that internal and external disciplinary mechanisms are reasonably effective after a failed bid.

The rest of the paper proceeds as follows. Section 2 situates our contributions within the various strands of the related literature. Section 3 describes the sample of hostile bids. Section 4 addresses whether or not frustrating action affects abnormal stockholder wealth from a hostile bid. Section 5 examines potential determinants of the likelihood that frustrating action is managers' preferred resistance strategy. Section 6 addresses whether or not a frustrating action affects the likelihood of CEO turnover after a hostile bid. Finally, Section 7 concludes.

2. Contributions and Related Literature

In this section we situate the contributions of this paper within the context of the different strands of the related extant literature. We first discuss the theoretical models and then the empirical evidence.

Berkovitch and Khanna (1990) provide a theoretical appraisal of a frustrating action when they analyze what they label as ‘value-reducing defensive strategies’. They conclude that a frustrating action can be the optimal resistance strategy for maximizing stockholder wealth. This is because although a frustrating action is likely to be value-reducing for the initial bidder, it does not necessarily make the target firm less valuable, or more difficult to acquire, for another bidder. Moreover, the mere threat to retaliate with a more severe form of managerial resistance can be sufficient to extract, even from the initial bidder, the highest possible takeover premium for stockholders. Therefore, a frustrating action can be the most effective way to beneficially unlock the value of information in the hands of only managers and possibly the initial bidder.⁵ Indeed, stockholders are more willing to accept a higher takeover premium, especially when it is more costly to acquire information about the target firm (see Fishman, 1988; Hirshleifer and Titman, 1990). Furthermore, when stockholders are dissatisfied with the takeover premium, it can pay to resist over the price and buy time for this purpose (Dimopoulos and Sacchetto, 2014; Bates and Becher, 2017).

Notwithstanding this economic rationale for a frustrating action, a more severe form of resistance has the potential to increase the likelihood that the initial bidder will withdraw; and, in the absence of another bidder, to create a pathway for managers to improve their chances of holding onto office. Indeed, it is well-known that managers are at high risk of being turned over after a completed bid (see Martin and McConnell, 1991; Agrawal and Walkling, 1994; Harford, 2003; Kini, Kracaw, and Mian, 2004). Therefore, maximizing potential for price improvement is not necessarily the primary managerial motive behind a frustrating action during hostile bids. Rather, as Baron (1983) concludes from a theoretical appraisal of resistance in general, entrenchment can make managers incapable of agreeing to a takeover bid,

⁵ Strictly speaking, the theory, which is similar to that by Shleifer and Vishny (1986a), depends on a frustrating action that discriminates against the initial bidder (e.g. divestment and acquisition). However, Stulz (1988) reaches much the same theoretical conclusion for frustrating action that is not discriminatory (e.g. payout).

irrespective of its worth to stockholders. In this respect, there are two important caveats in the theoretical appraisal of a frustrating action by Berkovitch and Khanna (1990). One is that a more severe form of resistance is more likely to be misused for entrenchment when managers have more to fear from a hostile bid and when managers have more control. The other is that, irrespective of the extent of managerial control, managers' means and motives, good and bad, for retaliating with a more severe form of bid resistance are likely to increase with the strength of stockholder belief, right or wrong, that the internal corporate-governance is sufficiently effective for the benefits of a frustrating action to outweigh the costs arising from its possible misuse for entrenchment.

Extant empirical studies of hostile bids largely consider managers' decision to resist *per se* (which we label as 'general hostility') without regard to the nature of the takeover resistance. However, the related theoretical literature discussed above, suggests that the nature and severity of managerial resistance is important for understanding the dilemma surrounding the means and motives, good and bad, for resistance during a takeover bid. Therefore, what makes our study different from extant empirical studies is that it is more about the manner in which managers then decide to retaliate; specifically, in the form of two broad strategies: frustrating actions intended to torpedo the bid, and non-lethal managerial resistance. The contributions that we generate in this context are discussed below.

Firstly, Schwert (2000) and Bates and Becher (2017) conclude that managers essentially show general hostility to a takeover bid for stockholder advantage rather than as a ploy for their own ends.⁶ However, our new findings suggest a divide in managerial motives behind resistance during a takeover bid. That is, although our findings provide some support for the suggestion that general hostility is motivated by greater target-firm undervaluation, and, by implication, by maximizing potential for price improvement (see Jennings and Mazzeo,

⁶ Franks and Harris (1996) reach much the same conclusion for UK hostile bids that predate those in our sample.

1993; Bates and Becher, 2017), these motives would seem to distinctly matter less for managers that then go on to retaliate with a frustrating action. Moreover, although we find some support for the suggestion that general hostility is also motivated by lower managerial quality, and, by implication, by misuse for entrenchment (see Mørck, Shleifer, and Vishny, 1988), these motives would seem to distinctly matter more for managers that then go on to retaliate with frustrating action. Given that 41 percent of hostile bids in our sample face at least one type of frustrating action, this divide is important to addressing the dilemma surrounding managerial means and motives, good and bad, for resistance.

Secondly, we find that the divide in motives is also apparent in the context of the extent of managerial control. Extant empirical studies find that the extent of managerial control affects takeover decisions and takeover outcomes for stockholders (see Mikkelson and Partch, 1989; Shivdasani, 1993; Cotter and Zenner, 1994; Cotter, Shivdasani, and Zenner, 1997; Moeller, 2005; Jenter and Lewellen, 2015). However, few studies consider whether or not the extent of managerial control affects the likelihood of resistance during a takeover bid. Although we find some support for the suggestion that general hostility is motivated by greater managerial control, and, by implication, by misuse for entrenchment (see Cotter and Zenner, 1994), these motives would also seem to distinctly matter more for managers that then go on to retaliate with a frustrating action. However, independent of the extent of managerial control, we find that (the Cadbury) reforms of internal corporate-governance strengthen managers' means and motives, good and bad, for preferring to retaliate with a frustrating action. This finding gains support from our earlier discussion of the related theoretical literature.

Thirdly, by differentiating between resistance strategies that include a frustrating action and those that do not, we also generate contributions in the context of the empirical literature that examines expected and actual abnormal stockholder wealth from a hostile bid (Huang and Walkling, 1987; Schwert, 2000), managerial turnover after a completed bid (Martin and McConnell, 1991; Agrawal and Walkling, 1994; Harford, 2003; Kini, et al, 2004), and

managerial turnover after a failed bid (Denis and Serrano, 1996; Bates and Becher, 2017). Although the overall average for actual abnormal stockholder wealth from hostile bids in our sample is 24 percent (which is in line with extant empirical studies), the wealth effect is 19 percentage-points worse for frustrating action than compared to only less severe types of managerial resistance. However, we find no evidence to suggest that stockholders foresee the coming of frustrating action, from as early as bid rumors through to bid announcement. Along with our earlier contributions, these new findings support a stockholder conviction that the frustrating action was managers' preferable resistance strategy for reasons of misuse for entrenchment. That said, although the overall CEO-turnover rate after hostile bids in our sample is 45 percent, the turnover effect is 38 (20) percentage-points greater for a frustrating action relative to non-lethal managerial resistance within one year of a failed bid (straight after a completed bid). For this to occur, it supports findings by Denis and Serrano (1996) that internal and external disciplinary mechanisms are sufficiently effective even after a failed bid. However, they only find evidence suggesting that an abnormally high turnover rate after failed bids is in response to adverse information already known about managers. Our finding suggests that it is also in response to adverse information revealed about offending managers during takeover bids (in the study, through misuse of frustrating action for entrenchment).

Fourthly, several extant empirical studies examine abnormal stockholder wealth and managerial turnover confined to individual types of frustrating actions (Dann and DeAngelo, 1988; Klein and Rosenfeld, 1988; Denis, 1990; Heron and Lie, 2006). However, our study is the first to collectively examine all types of frustrating actions during hostile bids. We find that market-adjusted returns are overwhelmingly negative, both collectively and for each type of frustrating action, which provides support for findings by Dann and DeAngelo (1988) suggesting that stockholders expect a frustrating action to make their firm less valuable, or more difficult to acquire, for the initial bidder. However, our new finding is that an average market-adjusted return confined to the days when frustrating action is actually announced

materially understates its wealth-reducing effect for stockholders, when measured throughout the duration of a hostile bid, and beyond for a failed bid; and when specifically benchmarked against non-lethal managerial resistance. Furthermore, similar to Klein and Rosenfeld (1988) and Denis (1990), we find a high managerial-turnover rate after a frustrating action. However, our new finding is that the turnover rate is abnormally high when specifically benchmarked against non-lethal managerial resistance. Most importantly, by exploiting reforms of internal corporate-governance practice, we are able to conclude that the negative stockholder-wealth effect and positive CEO-turnover effect of frustrating actions are almost certainly causal effects.

Lastly, Dimopoulos and Sacchetto (2014) generate structural estimates for the severity of managerial resistance that are positively determined by the takeover premium for stockholders. Like us, they find that the severity of managerial resistance is positively associated with common proxies for greater managerial control. However, the findings from our different approach to capturing the severity of managerial resistance independently of the takeover premium for stockholders – differentiating between frustrating actions and non-lethal managerial resistance – are suggestive of more severe bid resistance being motivated more by misuse for entrenchment than by maximizing potential for price improvement.

3. Sample of hostile bids

In this section we describe the sample of hostile bids. We present and discuss time-series data for hostile bids in Section 3.1, descriptive statistics for bid and target-firm characteristics in Section 3.2, and summary data for frustrating action in Section 3.3.

3.1 Hostile bids

To construct the sample of hostile bids, we begin with takeover offers for more than 50 percent control of UK target firms included in the Securities Data Corporation database as announced between July 1, 1989 and December 31, 2003. We then use the Corporate Register (published first in March 1989 and thereafter at least twice a year) to exclude takeover offers

for target firms not listed on the London Stock Exchange, and primarily from more-regulated industries: financials, utilities, telecommunications, broadcasting, newspapers, and public transport.

In the absence of a previous offer for at least 1 year, a takeover bid in our sample begins from as early as rumors, before proceeding to announcement of the initial offer. Similar to an empirical procedure used by Bates and Becher (2017), a takeover bid then extends to other offers, each successively separated by no more than 1 year, until completed or reported as having failed. Merging offers in this way ensures that, irrespective of whether or not a takeover bid fails, we measure actual abnormal stockholder wealth from a hostile bid, and capture CEO turnover after a hostile bid, in the absence of another offer for at least 1 year. We carry out these screening and merging procedures using the Regulatory News Service (RNS) of the London Stock Exchange. In keeping with extant empirical studies, a takeover bid is hostile in our sample when the RNS reports that managers publicly reject (resist) the initial offer.

We present time-series data for hostile bids in Table 1. The time-series data in Panel A shows that hostile bids makeup 16.41 percent of all (792) takeover bids. After the Cadbury reforms of internal corporate-governance practice came into effect during 1993, there is a noticeable and sustained fall in the annual percentages of takeover bids that are hostile. However, this understates the continuing economic importance of hostile bids. The time-series data in Panel B shows that, overall, hostile bids makeup 31.66 percent of real (2003) GBP 392,711.67 million aggregate values (sizes) of target firms. That is, hostile bids are, in the main, associated with larger target firms than compared to other bids. Moreover, unlike in Panel A, there is no sustained fall in the annual percentages of takeover bids that are hostile after the Cadbury reforms. Therefore, firm size would seem to be a persistent determinant of managers' means to show general hostility to a takeover bid.

3.2 *Bid and target-firm characteristics*

We present descriptive statistics for bid and target-firm characteristics in Table 2; and provide definitions for these variables, all of which are salient in the context of the related empirical literature, in Table A1 of the Appendix. For the variables for bid characteristics, the overall averages for expected and actual abnormal stockholder wealth from hostile bids are 23.48 and 24.47 percent, respectively. However, in comparing the spreads for these variables, the standard deviation is roughly twice as large for the second. For the analysis that begins in the next section, results are, in the main, not affected by whether or not we use market-adjusted returns or benchmark returns against a market model estimated before bid rumors. Moreover, results are, in the main, not affected by whether or not we winsorize abnormal returns, and other applicable variables. Although we also measure initial premiums from before rumors, average expected abnormal stockholder wealth is lower in comparison, and by a percentage difference roughly equal to the overall failure rate for hostile bids of 31.54 percent. Furthermore, the overall CEO-turnover rate after hostile bids is 44.63 percent, while the overall rate for multiple bidders during hostile bids is 19.23 percent. These main descriptive statistics are in line with extant empirical studies.

For the variables related to information asymmetry and the proxies for the extent of managerial quality and managerial control, we measure and capture these target-firm characteristics before bid rumors. We subsequently change to a natural logarithmic structural specification for firm size. Moreover, results are, in the main, not affected by whether our firm-performance proxies for the extent of managerial quality are left raw or industry-adjusted. Because of different findings in extant empirical studies, we examine linear, curvilinear, and nonlinear structural specifications for certain proxies for the extent of managerial control: CEO age, CEO stockholding, and directors' aggregate stockholding. However, none of our proxies for the extent of managerial control are directly affected by the Cadbury reforms of internal corporate-governance practice. In particular, the Cadbury reforms also made it almost mandatory for the board not to be chaired by the CEO, but not specifically for the board to be

chaired by an outside (independent) and reputable (derived from holding at least one other directorship of an exchange-listed firm) director.

3.3 *Frustrating action*

We present summary data for frustrating action in Table 3. Using the RNS, we differentiate between frustrating action and only less severe types of managerial resistance during hostile bids. Unlike frustrating action, less severe types of managerial resistance do not extend to intentions to retaliate with obstructive operational actions and financial transactions. Rather, less severe types of managerial resistance amount, in the main, to releasing financial and strategic information, lobbying stakeholders, raising antitrust concerns, litigation, and solicitation of another offer (including from a white knight). Litigation is generally conceded to be a less severe type of managerial resistance in extant theoretical and empirical studies, but is comparatively rare during UK hostile bids. It is common for managers to retaliate with at least one type of frustrating action during the timespan of our study, but, overall, not quite as common as only resorting to less severe types of bid resistance. Specifically, the overall rate for at least one type of frustrating action during hostile bids is 40.77 percent.

However, managers quite often retaliate with more than one type of frustrating action during hostile bids. Managers frequently retaliate by spinning-off and selling-off crown-jewel assets. This divestment type of frustrating action is resorted to during 20.00 percent of hostile bids. Furthermore, during 13.08 percent of hostile bids, managers retaliate with an acquisition type of frustrating action: making a pacman offer for the initial bidder, taking-over another firm or purchasing its assets, and creating a joint venture. Managers less frequently retaliate by repurchasing stock and paying a special dividend. This payout type of frustrating action is resorted to during 6.15 percent of hostile bids. However, managers rarely retaliate with the following types of frustrating action. Firstly, a golden parachute, which is resorted to during 3.85 percent of hostile bids. Secondly, a management buyout, which is also resorted to during 3.85 percent of hostile bids. Lastly, a white squire (blocking stake, as distinct from solicitation

of a white-knight offer), which is resorted to during 3.08 percent of hostile bids. It is widely-accepted in extant theoretical and empirical studies that these types of intentions to retaliate with obstructive operational actions and financial transactions have the capability to make the target firm less valuable and more difficult to acquire for the initial bidder.

4. Does a frustrating action affect abnormal stockholder wealth from a hostile bid?

For results (not tabulated) contained to the days when frustrating action is actually announced and for which there are no confounding announcements, an average market-adjusted return is -2.16 percent for all (first and subsequent) intentions and -2.48 percent when we restrict the days to only first intentions. These wealth-reducing effects of frustrating action are statistically significant (at the 1 percent level) and consistent with empirical findings by Dann and DeAngelo (1988). Moreover, market-adjusted returns are overwhelmingly negative, both collectively and for each type of frustrating action. These results provide support for theoretical findings by Shleifer and Vishny (1986a), Stulz (1988), and Berkovitch and Khanna (1990) suggesting that, in the main, stockholders expect frustrating action to make their firm less valuable, or more difficult to acquire, for the initial bidder.

However, Shleifer and Vishny (1986a), Stulz (1988), and Berkovitch and Khanna (1990) go on to suggest that because frustrating action, or the threat of such, is a more severe form of resistance, it can be the optimal managerial strategy for extracting the maximum possible takeover premium for stockholders. Indeed, our estimate for the stockholder-wealth effect of frustrating action could arguably be misstated for several interrelated reasons. Firstly, we do not consider the possibility that stockholders have some foresight, from as early as bid rumors, about the coming of frustrating action. Secondly, we do not measure the stockholder-wealth effect of frustrating action throughout the duration of a hostile bid and beyond for a failed bid. Lastly, we do not relate the stockholder-wealth effect to that of managerial resistance without frustrating action, and do not account for differences in bid and target-firm

characteristics. We address these concerns in this section. The empirical analysis is similar to that of Huang and Walkling (1987) and Schwert (2000), except that in these studies it is for the effect of general hostility on expected and actual abnormal stockholder wealth, respectively, from a takeover bid.

We present and discuss results (coefficients induced by a one-unit change in each of the variables) from standard linear regressions, for expected and actual abnormal stockholder wealth from a hostile bid, in Sections 4.1 and 4.2, respectively; and from instrumental variable (IV) linear regressions in Section 4.3, wherein the variable of main interest, for whether or not a hostile bid faces at least one type of frustrating action, is subsequently treated as a potentially suspect endogenous variable. For all regressions, we include the full set of variables for initial-offer and target-firm characteristics, as well as always controlling for then primary industries of target firms.⁷ The results from standard regressions are, in the main, not affected by whether or not we also control for announcement years of hostile bids. Lastly, we add the variables for multiple bidders and a failed bid, but only to regressions for actual abnormal stockholder wealth from a hostile bid because these variables are not ex-ante with respect to expected abnormal stockholder wealth.

4.1 Expected stockholder-wealth effect

We present results from standard linear regressions for expected abnormal stockholder wealth from a hostile bid in Table 4. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4), upon which we base the discussion, combines the strongest of these structural specifications for each of these variables.

⁷ We combine industries into four groups: oil & gas and basic materials; industrials, including technology hardware & equipment; consumer goods and healthcare; and consumer services, including software & computers services.

For the variable of main interest, the result shows that stockholders do not expect the wealth effect of frustrating action to be significantly different from the wealth effect of only less severe types of managerial resistance. At this point, there are two plausible explanations for this finding. One is that stockholders do not foresee the coming of frustrating action, from as early as bid rumors through to bid announcement. Alternatively, stockholders do, in fact, have some foresight about this, but are neither sufficiently convinced that frustrating action is the optimal resistance strategy for maximizing their abnormal wealth from a hostile bid, nor sufficiently convinced that it is to be misused for managerial entrenchment.

4.2 *Actual stockholder-wealth effect*

We present results from standard linear regressions for actual abnormal stockholder wealth from a hostile bid in Table 5. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4), upon which we base the discussion, combines the strongest of these structural specifications for each of these variables.

For the variable of main interest, the result shows that the actual stockholder-wealth effect of frustrating action is 19.13 percentage-points worse than compared to the actual stockholder-wealth effect of only less severe types of managerial resistance. This wealth-reducing effect of frustrating action is statistically significant (at the 5 percent level) and, relative to the overall average for actual abnormal stockholder wealth from hostile bids, economically substantial. Therefore, an average market-adjusted return contained to the days when frustrating action is actually announced would seem to materially underestimate its wealth-reducing effect for stockholders. This finding also suggests that stockholders do not foresee the coming of frustrating action, from as early as bid rumors through to bid announcement. However, when frustrating action is actually announced, stockholders become increasingly convinced over the remaining duration of a hostile bid and 1 year beyond for a failed bid (in

the absence of another offer) that, in the main, it was misused for managerial entrenchment. Therefore, this would seem to be contrary to theoretical findings for frustrating action by Shleifer and Vishny (1986a), Stulz (1988), and Berkovitch and Khanna (1990).

The actual wealth-reducing effect of frustrating action is after we account for significant effects of the other variables. In particular, the positive effects of initial premium, whether or not the initial offer is of cash-only, and firm size. However, whether or not a hostile bid has multiple bidders, and whether or not a hostile bid fails, makes no significant difference for actual abnormal stockholder wealth.

4.3 *Endogeneity*

By not treating the variable of main interest as endogenous, we may be biasing the actual stockholder-wealth effect of frustrating action. Of particular concern is the possibility that reverse causation is upwardly biasing (overstating) the actual wealth-reducing effect of frustrating action. That is, in anticipation of an otherwise below maximum possible takeover premium, frustrating action may be the optimal managerial strategy for maximizing actual abnormal stockholder wealth from a hostile bid because it is more severe than compared to only other types of resistance. Indeed, providing support for theoretical findings by Fishman (1988) and Hirshleifer and Titman (1990), the results from standard regressions suggest that, in the main, stockholders react more favorably to a higher initial premium.

To address this concern, and other potential issues concerning endogeneity (e.g. bias induced by not accounting for unobservable factors), we present results from an IV linear regression for actual abnormal stockholder wealth from a hostile bid in Table 6, by otherwise replicating the standard regression in Column (4) of Table 5. Since the variable of main interest is binary in nature, we intermediately estimate probabilities of frustrating action from a probit regression for the likelihood that, for reasons of maximizing stockholder wealth and misuse for entrenchment, it is managers' preferable resistance strategy. For this intermediate regression (results from which are average marginal effects induced by a one-unit change in each of the

variables) in Column (1) of Table 6, we include all the other variables, and controls, in the standard regression. In addition, we exploit the Cadbury reforms of internal corporate-governance practice as a naturally exogenous source of variation, with strong theoretical validity, for estimating the probabilities of frustrating action.⁸

The result for this post-Cadbury variable, for whether or not it is mandatory for the target firm to comply with the reforms before bid rumors, shows that it also has strong empirical validity, in that the probability of frustrating action is significantly higher after the Cadbury reforms than compared to before them. A plausible explanation for this finding is that managers regard the Cadbury reforms as a means of more effectively conveying, genuinely and as a ploy, to stockholders that the benefits of frustrating action outweigh the costs arising from its possible misuse for entrenchment. Consistent with theoretical caveats by Berkovitch and Khanna (1990), this, in the main, strengthens managers' means and motives, good and bad, for preferring to retaliate with frustrating action; and independently of the extent of their control, which we account for with the other variables.

Applying an econometric approach endorsed by Angrist and Pischke (2009, pp. 190-192), we then use the estimated probabilities of frustrating action as an instrumental variable in the IV regression in Column (2) of Table 6.⁹ Strongly supported by a first-stage test of instrument validity (an F-statistic well in excess of a recommended minimum threshold of 10), the result for a now-instrumented variable of main interest also shows an actual stockholder-wealth effect of frustrating action that is negative and significant. Most importantly, we are able to conclude that the actual wealth-reducing effect of frustrating action is almost certainly a causal effect in the standard regression, but not in a reverse sense.

⁸ Dahya, et al (2016) exploit the Cadbury reforms for use directly as an instrumental variable when examining the influence of outside directors on bidder returns. However, we exploit the Cadbury reforms in the intermediate regression, before then proceeding to the IV regression. Again, this is because, unlike theirs, our potentially suspect endogenous variable is binary in nature.

⁹ Because of the intermediate regression, we do not tabulate the first-stage of the IV regression. The results are, in the main, not affected by whether we use two-stage least squares, limited-information maximum likelihood, or a generalized method of moments estimator.

To also be certain about the expected stockholder-wealth effect of frustrating action, we apply the same approach in Columns (3) and (4) of Table 6, by otherwise replicating the standard regression in Column (4) of Table 4. Again, strongly supported by a first-stage test of instrument validity, the result for a now-instrumented variable of main interest also shows an expected stockholder-wealth effect of frustrating action that is not significant. However, a Chi² test of endogeneity is only significant for the IV regression for actual abnormal stockholder wealth from a hostile bid.

5. Why is a frustrating action likely to be managers' preferred resistance strategy?

The ex-post evidence that we document in the previous section suggests that stockholders are not convinced that frustrating action was the optimal resistance strategy for maximizing their abnormal wealth from a hostile bid, but are convinced that, in the main, it was misused for managerial entrenchment. To establish whether or not there is ex-ante support for this stockholder conviction, in this section we examine, in a more systematic way than was possible in the confines of an instrumental-variable regression, potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy.

We include the variables for initial-offer characteristics and those related to information asymmetry as proxies for the extent of target-firm undervaluation, and, by implication, for potential for price improvement. Greater target-firm undervaluation could arguably strengthen managers' means and motives for preferring to retaliate with frustrating action for reasons of maximizing stockholder wealth. This is because a more severe form of managerial resistance can be optimal for extracting the maximum possible takeover premium for stockholders, as is suggested from theoretical findings for frustrating action by Shleifer and Vishny (1986a), Stulz (1988), and Berkovitch and Khanna (1990).

We also include the variables for the other target-firm characteristics as proxies for the extent of managerial quality and managerial control. Lower managerial quality and greater

managerial control could arguably strengthen managers' means and motives for preferring to retaliate with frustrating action for reasons of misuse for entrenchment. This is because a more severe form of resistance can also be misused for entrenchment, especially by managers with more to fear from a hostile bid and by managers with more control, as is suggested from theoretical caveats for frustrating action by Berkovitch and Khanna (1990).

We present and discuss results (average marginal effects induced by a one-unit change in each of the variables) from standard probit regressions, for the likelihood that frustrating action is managers' preferable resistance strategy, in Section 5.1; and from a probit regression with sample selection in Section 5.2, wherein unobservable factors that increase the likelihood of observing resistance during a takeover bid are subsequently taken into account. For all regressions, we control for then primary industries of target firms, but, because of the addition of the variable for the Cadbury reforms, do not also control for announcement years of hostile bids. Lastly, the variables for multiple bidders and a failed bid are excluded from regressions in this section because these bid characteristics are not ex-ante with respect to whether or not a hostile bid faces at least one type of frustrating action.

5.1 Standard likelihood model

We present results from standard probit regressions for the likelihood that frustrating action is managers' preferable resistance strategy in Table 7. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4), upon which we base the discussion, combines the strongest of these structural specifications for each of these variables.

For initial-offer characteristics, the results show that the probability of frustrating action is 16.58 percentage-points higher when the initial premium is increased by one standard deviation. Furthermore, the probability of frustrating action is 16.46 percentage-points lower when the initial offer is of cash-only than compared to when this is not the case. Since managers

are less likely to show general hostility to a takeover bid when the initial premium is higher (see Jennings and Mazzeo, 1993), and especially when it is abnormally higher (see Bates and Becher, 2017), a plausible assumption is that, *ceteris paribus*, the higher is the initial premium, the lesser is the extent to which it undervalues the target firm. Moreover, empirical findings by Malmendier, Opp, and Saidi (2016) suggest that a cash-only offer is a stronger signal that the bidder regards the target firm to be undervalued to a greater extent. Therefore, these effects suggest that frustrating action is associated to a lesser extent with greater target-firm undervaluation, and, by implication, with greater potential for price improvement, than compared to only less severe types of managerial resistance.

Nor do our findings for information asymmetry suggest that greater target-firm undervaluation strengthens managers' means and motives for preferring to retaliate with frustrating action for reasons of maximizing stockholder wealth. A plausible assumption is that, *ceteris paribus*, a target firm that was only recently exchange-listed and a target firm with more financial slack are more susceptible to undervaluation associated with information asymmetry (see Jennings and Mazzeo, 1993). For the variables related to information asymmetry, the results show that the probability of frustrating action is 44.84 percentage-points lower when the target firm was only recently exchange-listed than compared to when this is not the case. Furthermore, the probability of frustrating action is 10.42 percentage-points lower when the target firm's cash-to-assets ratio is increased by one standard deviation.

In contrast, our findings suggest that frustrating action is associated to a greater extent with lower managerial quality than compared to only less severe types of bid resistance. A plausible assumption is that the extent of managerial quality is reflected in the performance of the target firm, and that, *ceteris paribus*, managers of a poorly-performing target firm have more to fear from a hostile bid (see Mørck, et al, 1988; Shivdasani, 1993). For the proxies for the extent of managerial quality, the results show that the probability of frustrating action is

19.93 percentage-points lower when the target firm's asset-turnover ratio is increased by one standard deviation.

Moreover, our findings suggest that, in the main, greater managerial control also strengthens managers' means and motives for preferring to retaliate with frustrating action for reasons of misuse for entrenchment. For the proxies for the extent of managerial control, the results show an inverted curvilinear relationship between the probability of frustrating action and CEO age that peaks for middle-aged managers. This relationship gains support from findings in extant empirical studies suggesting that managerial preference for control increases with age (see Serfling, 2014), but decreases as managers approach retirement-age (see Jenter and Lewellen, 2015). The supplementary results (predictive margins and contrasts in predictive margins) that we present in Table 8 show the relationship in more detail. In Panel B of Table 8, the supplementary results show that the changes in the probability of frustrating action induced by successive two-unit changes in CEO age are positive for ages from 38 to 52, not significantly different from zero for ages from 52 to 60, and negative for ages from 60 to 66.

Furthermore, the results in Table 7 make no suggestion of there being curvilinear relationships between the probability of frustrating action and stockholdings of the CEO and the directors. However, the probability of frustrating action is 28.10 (46.87) percentage-points higher (lower) when the CEO stockholding (directors' aggregate stockholding) is increased by one standard deviation. These relationships gain support from findings in extant empirical studies suggesting that managerial control increases with the stockholding of the CEO, but decreases with the aggregate stockholding of the directors. Moeller (2005) finds that larger CEO stockholdings have adversely affected takeover premiums since the 1990s, which is a reverse of earlier times when larger CEO stockholdings had tended to benefit takeover outcomes for stockholders (see Mikkelsen and Partch, 1989). Cotter and Zenner (1994) find that managers are less likely to show general hostility to a takeover bid when a larger directors' aggregate stockholding aligns the interests of directors more to those of stockholders.

Furthermore, a plausible assumption is that, *ceteris paribus*, managerial control is weaker in the presence of the following. Firstly, a strong outside and reputable presence on the board (see Cotter, et al, 1997). The results show that the probability of frustrating action is 16.65 percentage-points lower when the board is chaired by an outside (independent) and reputable (derived from holding at least one other directorship of an exchange-listed firm) director than compared to when this is not the case. Secondly, a larger board, and, by implication, a board more difficult for managers to contain, irrespective of whether or not a larger board is otherwise less optimal (see Coles, Daniel, and Naveen, 2008). The results show that the probability of frustrating action is 11.89 percentage-points lower when the board's size is increased by one standard deviation. Thirdly, a board split over whether or not to resist; in particular, because of an interlocking bidder director (see Cotter, et al, 1997). The results show that the probability of frustrating action is 32.07 percentage-points lower when the board is split over whether or not to resist than compared to when this is not the case. Lastly, an ownership structure with a larger aggregation of outside blockholdings (see Shleifer and Vishny, 1986b; Shivdasani, 1993). The results show that the probability of frustrating action is 22.20 percentage-points higher when the aggregate outside blockholdings (each of at least 5 percent of the outstanding stock) are increased by one standard deviation.

These effects are statistically significant (to at least the 5 percent level) and, relative to the overall rate for at least one type frustrating action during hostile bids, materially substantial. Moreover, the effects on the probability of frustrating action are after we account for firm size and the Cadbury reforms of internal corporate-governance practice.

5.2 *Likelihood model with sample selection*

We make no claims that the effects on the probability of frustrating action are causal effects. However, there is the possibility that the effects are misrepresented because we do not account for unobservable factors that increase the likelihood of observing managerial resistance during a takeover bid. That is, because of these unobservable factors, we are observing some

hostile bids that would not be hostile on the basis only of the variables, and controls, included in the standard likelihood model. The unobservable factors are conceivably related to the costs of acquiring information about the target firm (see Fishman, 1988) and private benefits of managerial control (see Baron, 1983); increased costs and benefits of which may then make it more likely that frustrating action is managers' preferable resistance strategy, but for reasons of maximizing stockholder wealth and misuse for entrenchment, respectively. However, our ultimate concern is that information-acquisition cost and private benefits of control are potentially correlated with, and, by implication, misrepresenting, the effects on the probability of frustrating action that are suggestive of the extent of target-firm undervaluation and the extent of managerial quality and managerial control, respectively.

To address this concern, we present results from a probit regression with sample selection for the likelihood that frustrating action is managers' preferable resistance strategy in Table 9, by otherwise replicating the standard regression in Column (4) of Table 7. We first estimate aggregate unobservable factors that when increased increase the likelihood that managers will show general hostility to a takeover bid. For this first-stage, for whether or not managers publicly reject (resist) the initial offer, in Column (1) of Table 9, we include all the variables (including that for the Cadbury reforms), and controls, in the standard regression, except for the split-board variable because whether or not the board is split over resisting is only observable when managers show general hostility to a takeover bid. However, for the first-stage only, we change to the curvilinear structural specification for the directors' aggregate stockholding because this is the strongest structural specification for this variable in the context of all takeover bids (not only those that are hostile).

In addition, for estimating the aggregate unobservable factors, we use two new variables plausibly related to the probability of general hostility, but not to the probability of frustrating action. The first is whether or not a takeover bid begins with rumors, while the other is whether or not the initial offer is mandatory because the bidder acquired a stake of, or raised

its toehold to, at least 30 percent of the outstanding stock. In the main, bid rumors signal that an approach was rebuffed by managers, and, by implication, make it more likely that the initial offer will also be publicly rejected by them. However, bid rumors have no obvious implications for influencing the manner in which managers will then decide to retaliate. In the main, a mandatory initial offer is associated with an unsolicited bid, and, by implication, is more likely to increase the probability of general hostility. However, a mandatory initial offer also has no obvious implications for then influencing the probability of frustrating action. The results for these variables show that both are, indeed, positively related to the probability of general hostility. However, only the first has strong empirical validity, in that the relationship is significant.

For the other variables included in the first-stage, the results show significant effects of the initial premium and whether or not the initial offer is of cash-only that are negative and positive, respectively. These results suggest that, in the main, the probability of general hostility increases with the extent of target-firm undervaluation, and, by implication, with potential for price improvement. This provides support for empirical findings by Jennings and Mazzeo (1993) and Bates and Becher (2017). However, only, perhaps, the significant negative effect of the target firm's leverage suggests likewise because, in the main, the probability of general hostility would seem to decrease with information asymmetry. This provides support for empirical findings by Jennings and Mazzeo (1993).

Furthermore, providing support for empirical findings by Mørck, et al (1988), there is some suggestion that the probability of general hostility decreases with the extent of managerial quality, in that the effect of the target firm's stock performance is significantly negative. However, apart from the probability of general hostility peaking for a middle-aged CEO, and a mostly positive effect of the directors' aggregate stockholding providing support for empirical findings by Cotter and Zenner (1994), no other effects are significant to suggest that, in the main, the probability of general hostility increases with the extent of managerial control.

That said, as was earlier suggested by the time-series data for hostile bids, the probability of general hostility is significantly lower after the Cadbury reforms of internal corporate-governance practice than compared to before them. Moreover, this is now after we also account for firm size, the significant positive effect of which suggests that it is overarching for managers' means and motives, good and bad, for resistance during a takeover bid. This provides support for empirical findings by Schwert (2000).

A Chi² test for then including the estimated aggregate unobservable factors in the second-stage, for the probability of frustrating action, in Column (2) of Table 9 is not significant. Moreover, the effects of the variables on the probability of frustrating action are, in the main, not affected by whether or not we include the estimated aggregate unobservable factors. This includes the significant positive effect of the Cadbury reforms of internal corporate-governance practice, and the effect of firm size that continues not to be significant. Most importantly, our findings from the likelihood model with sample selection suggest that possible reasons, maximizing stockholder wealth and misuse for entrenchment, for making it more likely that managers will show general hostility to a takeover bid, manifest as distinctly being more entrenchment-orientated when it then comes to reasoning why frustrating action is more likely to be their preferable resistance strategy.

6. Does a frustrating action affect the likelihood of CEO turnover after a hostile bid?

The ex-ante evidence that we document in the previous section supports a stockholder conviction that, in the main, frustrating action was misused for managerial entrenchment. That said, it is important to recall that we find no evidence to suggest that stockholders foresee, from as early as bid rumors, the coming of frustrating action.

Since frustrating action is likely to be managers' preferable resistance strategy for reasons of entrenchment, and since, in the main, frustrating action reveals adverse information about managers, misuse of it could arguably lead to offenders having an abnormally high

likelihood of being replaced after a hostile bid. Alternatively, misuse of frustrating action for entrenchment could lead to offending managers improving their chances of holding onto office relative to managers only resorting to less severe types of bid resistance. Inevitably therefore, the direction of any CEO-turnover effect of frustrating action should have implications for the strength of adverse information revealed about managers and the effectiveness of internal and external disciplinary mechanisms after a hostile bid (see Hirshleifer and Thakor, 1994). Given that all managers are more likely to be turned over after a completed bid (see Martin and McConnell, 1991; Agrawal and Walkling, 1994; Harford, 2003; Kini, et al, 2004) than compared to after a failed bid (see Denis and Serrano, 1996; Bates and Becher, 2017), these interdependent implications should be clearest when we condition a CEO-turnover effect of frustrating action on whether or not a hostile bid fails (in the absence of another offer for at least 1 year). We address these considerations in this section.

We present and discuss results (average marginal effects induced by a one-unit change in each of the variables) from standard probit regressions, for the likelihood of CEO turnover after a hostile bid, in Section 6.1; and from an instrumental variable (IV) probit regression in Section 6.2, wherein the variable of main interest, for whether or not a hostile bid faces at least one type of frustrating action, is subsequently treated as a potentially suspect endogenous variable. For all regressions, we include the full set of bid and target-firm characteristics (including the variables for multiple bidders and a failed bid), as well as always controlling for then primary industries of target firms. The results from standard regressions are, in the main, not affected by whether or not we also control for announcement years of hostile bids.

6.1 Standard likelihood model

We present results from standard probit regressions for the likelihood of CEO turnover after a hostile bid in Table 10. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regressions in Columns (4) and (5), upon

which we base the discussion, combine the strongest of these structural specifications for each of these variables.

For the variable of main interest, the result in Column (4) shows that for a CEO who retaliates with frustrating action, the probability of being replaced after a hostile bid is 27.31 percentage-points higher than compared to a CEO who only resorts to less severe types of managerial resistance. This positive CEO-turnover effect of frustrating action is statistically significant (at the 1 percent level) and, relative to the overall turnover rate after hostile bids, materially substantial. It suggests misuse of frustrating action for entrenchment that reveals adverse information about offending managers strong enough to lead to an abnormally high likelihood of them being replaced after a hostile bid. For this to occur, it also suggests that, in the main, internal and external disciplinary mechanisms are sufficiently effective after a hostile bid. Empirical studies by Klein and Rosenfeld (1988) and Denis (1990) also find a high managerial-turnover rate after frustrating action. However, in both of these studies it only applies to the individual type of frustrating action being examined, and in neither of these studies is the turnover rate benchmarked against only less severe types of managerial resistance. The positive CEO-turnover effect of frustrating action is after we account for significant effects of the other variables. In particular, the negative effects of whether or not a hostile bid fails and firm size, and the positive effects of leverage and board size. However, whether or not a hostile bid has multiple bidders makes no significant difference for the likelihood of CEO turnover afterwards.

In Column (5), we interact the variable of main interest with the variable for a failed bid. The results show that for a CEO who retaliates with frustrating action, the probability of being replaced within 1 year of a failed bid (straight after a completed bid) is 38.13 (19.67) percentage-points higher than compared to a CEO who only resorts to less severe types of managerial resistance. These positive CEO-turnover effects of frustrating action are statistically significant (to at least the 5 percent level) and, relative to the overall turnover rate

after hostile bids, materially substantial. The first provides support for theoretical findings by Hirshleifer and Thakor (1994) suggesting that even after failed bids, adverse information revealed about managers during takeover bids (in our study, through misuse of frustrating action for entrenchment) can lead to an abnormally high turnover rate. Empirical findings by Denis and Serrano (1996) suggest that internal and external disciplinary mechanisms are sufficiently effective after failed bids for this to occur. However, they only find evidence suggesting that it is in response to adverse information already known about managers. We account for this prior information with the proxies for the extent of managerial quality before bid rumors, the effects of which, in the main, are not significant in this respect.

This then raises the question of why would managers misuse frustrating action for entrenchment when, in the main, it reveals adverse information about themselves and does not improve their chances of holding onto office after a hostile bid. The answer may partially lie with our other main finding from the results in Column (5). That is, conditional on managers retaliating with frustrating action, the probability of CEO turnover is 28.84 percentage-points lower after a failed bid than compared to after a completed bid. This CEO-turnover effect is also statistically significant (at the 1 percent level) and, relative to the overall turnover rate after hostile bids, materially substantial. It may also lie with a univariate result (not tabulated), in which we find that a hostile bid facing frustrating action is 17.01 percentage points more likely to fail than compared to a hostile bid only facing less severe types of managerial resistance. This result is statistically significant (at the 5 percent level) and, relative to the overall failure rate for hostile bids, materially substantial. All of this may increase the determination that managers with a predisposition for entrenchment are likely to have for wanting to make a hostile bid fail by resorting to a more severe form of resistance.

6.2 *IV likelihood model*

By not treating the variable of main interest as endogenous, there is the possibility that reverse causation is upwardly biasing (overstating) the positive CEO-turnover effect of

frustrating action. That is, in anticipation of an otherwise abnormally high likelihood of being turned over after a hostile bid, frustrating action may be managers' preferable strategy for improving their chances of holding onto office because it is more severe than compared to only other types of resistance. Indeed, for a standard likelihood model, Harford (2003) finds that managers are more likely to show general hostility to a takeover bid the more they anticipate being turned over afterwards.

To address this concern, we present results from an IV probit regression for the likelihood of CEO turnover after a hostile bid in Table 11, by otherwise replicating the standard regression in Column (4) of Table 10. We intermediately estimate probabilities of frustrating action from the probit regression in Column (1) of Table 11, which includes all the other variables, and controls, in the standard regression. Also similar to when earlier addressing endogeneity, we exploit the Cadbury reforms of internal corporate-governance practice as a naturally exogenous source of variation, with theoretical validity, for estimating the probabilities of frustrating action. Again, this has strong empirical validity.

The results from this intermediate regression also show that a hostile bid facing frustrating action is 34.43 percentage points less likely to have multiple bidders than compared to a hostile bid only facing less severe types of managerial resistance. This result is statistically significant (at the 1 percent level) and, relative to the overall rate for multiple bidders during hostile bids, materially substantial. Should multiple bidders be indicative of solicitation for the highest possible takeover premium, as is suggested from empirical findings for general hostility by Jennings and Mazzeo (1993), then the result is further suggestive of frustrating action likely being managers' preferable resistance strategy for reasons other than of maximizing stockholder wealth. Furthermore, the result for whether or not a hostile bid fails is not significant. Therefore, other factors would seem to conspire against the determination that managers with a predisposition for entrenchment are likely to have for wanting to make a hostile bid fail by resorting to a more severe form of resistance.

We then use the estimated probabilities of frustrating action as an instrumental variable in the IV regression in Column (2) of Table 11.¹⁰ The result for a now-instrumented variable of main interest also shows a CEO-turnover effect of frustrating action that is positive and significant. Moreover, a Chi² test of endogeneity is not significant. Most importantly, we are able to conclude that the positive CEO-turnover effect of frustrating action is almost certainly a causal effect in the standard regression, but not in a reverse sense.

7. Conclusions

This study is the first to examine hostile bids by differentiating between resistance strategies that do, and do not, include frustrating actions, i.e., potentially lethal operational actions and financial transactions intended to make it likely that the bid fails. Frustrating actions can include: (a) divestments in which assets of value to the bidder are sought to be sold or spun-off; (b) acquisitions in which the intent is to make the resisted bid problematic from a size, strategic, or antitrust perspective through a merger, takeover, or joint venture; (c) a “pacman” counter-offer to takeover the bidder; (d) large payouts and share buybacks; (e) golden parachutes; and (f) ‘white squire’ private equity. During our 15-year sample period, 41 percent of hostile bids involved at least one type of frustrating action. The remaining hostile bids used resistance strategies that could be quite severe but were still non-lethal, e.g.: (a) releasing financial and strategic information to aid in justifying and communicating a higher valuation; (b) lobbying relevant stakeholders; (c) soliciting alternative friendly offers; (d) raising antitrust concerns; and (e) undertaking relevant litigation.

Market-adjusted returns confined to the days when a frustrating action is actually announced provide support for findings from extant theoretical and empirical studies suggesting that stockholders expect it to make their firm significantly less valuable, or more difficult to acquire, for the initial bidder. However, contrary to theory, our new empirical

¹⁰ These results are not affected by whether we use maximum likelihood or a two-step estimator.

findings are suggestive of a frustrating action or the threat of such, likely being managers' preferred strategy for managerial entrenchment reasons rather than wanting to optimally extract the maximum possible takeover premium for stockholders.

First, we find that the average market-adjusted return confined to the days when a frustrating action is actually announced, significantly understates its wealth-reducing effect for stockholders, when benchmarked against the abnormal market-adjusted returns measured throughout the duration of a hostile bid and one year beyond for a failed bid (in the absence of another offer), and when benchmarked against non-lethal managerial resistance. However, we find no evidence to suggest that stockholders foresee the coming of frustrating action from as early as bid rumors to right up to the bid announcement. Secondly, relative to non-lethal managerial resistance, we find that a frustrating action is associated to a significantly lesser extent with common proxies for greater target-firm undervaluation and greater solicitation of another offer, and, by implication, with greater potential for price improvement. In contrast, we find that a frustrating action is associated to a significantly greater extent with common proxies for lower managerial quality and greater managerial control.

Collectively, these findings support a stockholder conviction that a frustrating action was managers' preferred resistance strategy for reasons of misuse for entrenchment. That said, we also find an increased CEO-turnover effect of a frustrating action, suggesting that its misuse reveals adverse information about offending managers significant enough to lead to an abnormally high likelihood (relative to non-lethal managerial resistance) of them being replaced after a hostile bid, and particularly within 1 year of a failed bid. For this to occur, it also suggests that internal and external disciplinary mechanisms are sufficiently effective after a hostile bid, and particularly so after a failed bid.

The findings are after we account for effects of salient bid and target-firm characteristics, and, where applicable, for unobservable factors that increase the likelihood of observing managerial resistance during a takeover bid. Moreover, we exploit the Cadbury

reforms of UK internal corporate-governance practice during 1993 as a naturally exogenous source of variation (with strong theoretical and empirical validity) for estimating probabilities of frustrating action for use as an instrumental variable. Importantly, we are able to conclude that the negative stockholder-wealth effect and positive CEO-turnover effect of frustrating action are likely causal effects.

There has been vigorous debate in the finance industry about the severity of managerial resistance.¹¹ Our study also indicates that the important dilemma surrounding means and motives, good and bad, for bid resistance should be addressed, not just by considering managers' decision to resist per se, but also the manner in which they then decide to retaliate: a frustrating action intended to torpedo the bid, or non-lethal managerial resistance.

¹¹ See: Hostile takeovers rise to 14-year high in M&A as confidence grows, Financial Times, June 8, 2014; A new kind of defense against hostile bids, New York Times, September 29, 2010.

Appendix

Table A1

Definitions for bid and target-firm characteristics

This table provides definitions for bid and target-firm characteristics. The data and information sources used to construct these variables are as follows. Panel A: bid characteristics (dependent variables) – the Datastream database and Regulatory News Service (RNS) of the London Stock Exchange. Panel B: bid characteristics (independent variables) – the RNS and Datastream database. Panel C: target-firm characteristics (independent variables related to information asymmetry) – the Corporate Register and Datastream database. Panel D: target-firm characteristics (independent variables that proxy for the extent of managerial quality) – the Datastream database. Panel E: target-firm characteristics (independent variables that proxy for the extent of managerial control) – Companies House, the Corporate Register, and the RNS. The sample of hostile bids is described in Table 1.

<i>Panel A: bid characteristics (dependent variables)</i>	
Bid characteristic	Definition
Expected abnormal stockholder wealth	Market-adjusted return (benchmarked against the FTSE All Share) from before bid rumors through to bid announcement.
Actual abnormal stockholder wealth	Market-adjusted return (benchmarked against the FTSE All Share) throughout the duration a hostile bid and 1 year beyond for a failed bid (in the absence of another offer).
CEO turnover	Binary variable for whether or not the CEO is replaced straight after a completed bid and within 1 year of a failed bid (in the absence of another offer).
<i>Panel B: bid characteristics (independent variables)</i>	
Bid characteristic	Definition
Multiple bidders	Binary variable for whether or not a hostile bid has multiple bidders.
Failed bid	Binary variable for whether or not a hostile bid fails.
Initial premium	Initial-offer price divided by stock price before bid rumors minus one.
Cash-only initial offer	Binary variable for whether or not the initial offer is of cash-only.
<i>Panel C: target-firm characteristics (independent variables related to information asymmetry)</i>	
Target-firm characteristic	Definition
Recently exchange-listed	Binary variable for whether or not the target firm was only recently exchange-listed (as flagged by the Corporate Register).
Stock volatility	Standard deviation of daily market-adjusted returns (benchmarked against the FTSE All Share) for the fiscal period before bid rumors.
Cash-to-assets ratio	Cash divided by assets for the fiscal period before bid rumors.
Firm size	Market capitalization plus debt for the fiscal period before bid rumors. In real (2003) GBP million.
Leverage	Debt divided by assets for the fiscal period before bid rumors.
<i>Panel D: target-firm characteristics (independent variables that proxy for the extent of managerial quality)</i>	
Target-firm characteristic	Definition
Asset-turnover ratio	Sales divided by assets for the fiscal period before bid rumors.
Stock performance	Market-adjusted return (benchmarked against the FTSE All Share) for the fiscal period before bid rumors.
Market-to-book ratio	Market capitalization plus debt divided by assets for the fiscal period before bid rumors.

Table A1 (continued)**Definitions for bid and target-firm characteristics**

Panel E: target-firm characteristics (independent variables that proxy for the extent of managerial control)

Target-firm characteristic	Definition
CEO age	CEO age before bid rumors.
CEO stockholding	CEO stockholding (as a percentage of the outstanding stock) before bid rumors.
Directors' aggregate stockholding	Directors' aggregate stockholding (as a percentage of the outstanding stock) before bid rumors.
Outside and reputable board chair	Binary variable for whether or not the board is chaired by an outside (independent) and reputable (derived from holding at least one other directorship of an exchange-listed firm) director before bid rumors.
Board size	Number of directors before bid rumors.
Split board	Binary variable for whether or not the board is split over whether or not to publicly reject (resist) the initial offer.
Aggregate outside blockholdings	Aggregate outside blockholdings (each of at least 5 percent of the outstanding stock) before bid rumors.

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Table 1**Sample of hostile bids: hostile bids**

This table presents time-series data for hostile bids. The sample of hostile bids is constructed by beginning with takeover offers for more than 50 percent control of UK target firms included in the Securities Data Corporation database as announced between July 1, 1989 and December 31, 2003. The Corporate Register (published first in March 1989 and thereafter at least twice a year) is then used to exclude takeover offers for target firms not listed on the London Stock Exchange, and primarily from more-regulated industries: financials, utilities, telecommunications, broadcasting, newspapers, and public transport. In the absence of a previous offer for at least 1 year, a takeover bid in the sample begins from as early as rumors, before proceeding to announcement of the initial offer. A takeover bid then extends to other offers, each successively separated by no more than 1 year, until completed or reported as having failed. These screening and merging procedures are carried out using the Regulatory News Service (RNS) of the London Stock Exchange. A takeover bid is hostile in the sample when the RNS reports that managers publicly reject (resist) the initial offer. The time-series data in Panel A shows the annual percentages of takeover bids that are hostile. The time-series data in Panel B shows the annual percentages of real (2003) GBP million of target-firm value attributable to hostile bids.

<i>Panel A: annual percentages of takeover bids that are hostile</i>				
Announcement year	Takeover bids	Hostile bids	Percentage hostile	
1989	42	13	30.95	
1990	55	15	27.27	
1991	58	17	29.31	
1992	32	11	34.38	
1993	27	5	18.52	
1994	33	5	15.15	
1995	41	8	19.51	
1996	39	8	20.51	
1997	73	7	9.59	
1998	85	8	9.41	
1999	119	12	10.08	
2000	82	7	8.54	
2001	34	5	14.71	
2002	34	6	17.65	
2003	38	3	7.89	
1989-2003	792	130	16.41	

<i>Panel B: annual percentages of real (2003) GBP million of target-firm value attributable to hostile bids</i>				
Announcement year	Takeover bids	Hostile bids	Percentage hostile	Observations
1989	32,351.37	28,525.87	88.18	37
1990	17,857.70	5,260.42	29.46	53
1991	26,487.37	16,112.39	60.83	56
1992	5,449.71	4,001.31	73.42	32
1993	2,661.87	775.74	29.14	22
1994	8,625.51	5,733.94	66.48	30
1995	25,192.68	19,030.70	75.54	38
1996	11,291.71	3,523.25	31.20	34
1997	17,802.34	8,560.41	48.09	69
1998	42,226.63	4,085.01	9.67	78
1999	52,204.45	5,234.05	10.03	115
2000	106,577.50	6,332.86	5.94	79
2001	8,899.71	5,575.99	62.65	33
2002	15,028.02	634.29	4.22	31
2003	20,055.11	10,938.58	54.54	35
1989-2003	392,711.67	124,324.80	31.66	742

Table 2**Sample of hostile bids: descriptive statistics for bid and target-firm characteristics**

This table presents descriptive statistics for bid and target-firm characteristics. Definitions for these variables are provided in Table A1 of the Appendix. The sample of hostile bids is described in Table 1.

Bid or target-firm characteristic	Mean	Standard deviation	Observations
Expected abnormal stockholder wealth	0.2348	0.2569	119
Actual abnormal stockholder wealth	0.2447	0.4700	120
CEO turnover	0.4463		121
Multiple bidders	0.1923		130
Failed bid	0.3154		130
Initial premium	0.3349	0.3728	128
Cash-only initial offer	0.6769		130
Recently exchange-listed	0.1628		129
Stock volatility	0.0220	0.0137	128
Cash-to-assets ratio	0.1054	0.1527	127
Firm size	986.70	2,336.59	126
Leverage	0.5544	0.1822	127
Asset-turnover ratio	1.3861	0.8920	127
Stock performance	-0.3247	0.4208	128
Market-to-book ratio	1.3185	0.5003	126
CEO age	51.57	5.59	120
CEO stockholding	2.72	7.26	121
Directors' aggregate stockholding	2.21	6.51	121
Outside and reputable board chair	0.3471		121
Board size	7.13	2.35	121
Split board	0.1231		130
Aggregate outside blockholdings	29.26	20.00	121

Table 3**Sample of hostile bids: frustrating action**

This table presents summary data for frustrating action. The sample of hostile bids is described in Table 1. The Regulatory News Service of the London Stock Exchange is used to differentiate between frustrating action and only less severe types of managerial resistance during hostile bids. Unlike frustrating action, less severe types of managerial resistance do not extend to intentions to retaliate with obstructive operational actions and financial transactions. Rather, less severe types of managerial resistance amount, in the main, to releasing financial and strategic information, lobbying stakeholders, raising antitrust concerns, litigation, and solicitation of another offer (including from a white knight). Divestment type of frustrating action is spinning-off and selling-off crown-jewel assets. Acquisition type of frustrating action is making a pacman offer for the initial bidder, taking-over another firm or purchasing its assets, and creating a joint venture. Payout type of frustrating action is repurchasing stock and paying a special dividend. White squire is a blocking stake (as distinct from solicitation of a white-knight offer).

Frustrating action	Hostile bids	% of all hostile bids	Observations
At least one type	53	40.77	130
Divestment	26	20.00	130
Acquisition	17	13.08	130
Payout	8	6.15	130
Golden parachute	5	3.85	130
Management buyout	5	3.85	130
White squire	4	3.08	130

Table 4**Effect of frustrating action on abnormal stockholder wealth from a hostile bid: expected stockholder-wealth effect**

This table presents results (coefficients induced by a one-unit change in each of the variables) from standard linear regressions for expected abnormal stockholder wealth from a hostile bid. The sample of hostile bids is described in Tables 1 and 2. Definitions for initial-offer and target-firm characteristics are provided in Table A1 of the Appendix. Frustrating action is described in Table 3. Frustrating action is a binary variable for whether or not a hostile bid faces at least one type of frustrating action. Controls for then primary industries of target firms are combined into four groups: oil & gas and basic materials; industrials, including technology hardware & equipment; consumer goods and healthcare; and consumer services, including software & computers services. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4) combines the strongest of these structural specifications for each of these variables. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Initial-offer or target-firm characteristic	Expected abnormal stockholder wealth			
	(1)	(2)	(3)	(4)
Frustrating action	-0.0316 (0.0289)	-0.0303 (0.0315)	-0.0352 (0.0303)	-0.0299 (0.0304)
Initial premium	0.5397*** (0.0560)	0.5429*** (0.0588)	0.5436*** (0.0574)	0.5424*** (0.0562)
Cash-only initial offer	0.1036*** (0.0390)	0.1168*** (0.0399)	0.1057*** (0.0386)	0.1170*** (0.0399)
Recently exchange-listed	0.0265 (0.0445)	0.0340 (0.0430)	0.0233 (0.0434)	0.0345 (0.0432)
Stock volatility	1.5585 (1.7809)	2.2132 (1.7678)	1.9625 (1.7141)	2.2056 (1.7562)
Cash-to-assets ratio	0.0145 (0.0935)	0.0487 (0.1055)	0.0296 (0.0918)	0.0438 (0.0922)
ln(Firm size)	0.0334*** (0.0118)	0.0291** (0.0126)	0.0271** (0.0128)	0.0288** (0.0124)
Leverage	-0.0610 (0.0936)	-0.0813 (0.0985)	-0.0652 (0.0932)	-0.0799 (0.0935)
Asset-turnover ratio	0.0145 (0.0205)	0.0158 (0.0216)	0.0116 (0.0215)	0.0158 (0.0214)
Stock performance	0.0459 (0.0450)	0.0666 (0.0474)	0.0595 (0.0471)	0.0665 (0.0466)
Market-to-book ratio	0.0125 (0.0304)	0.0054 (0.0290)	0.0126 (0.0294)	0.0060 (0.0277)
CEO age	0.0008 (0.0026)	-0.0679** (0.0306)		-0.0677** (0.0301)
CEO age ²		0.0007** (0.0003)		0.0007** (0.0003)
ln(CEO age)			0.0136 (0.1308)	
CEO stockholding	0.0021 (0.0021)	0.0031 (0.0111)		0.0020 (0.0022)
CEO stockholding ²		-0.0000 (0.0004)		
ln(1 + CEO stockholding)			0.0091 (0.0158)	
Directors' aggregate stockholding	0.0005 (0.0016)	-0.0084 (0.0094)		-0.0082 (0.0085)
Directors' aggregate stockholding ²		0.0001 (0.0001)		0.0001 (0.0001)
ln(1 + Directors' aggregate stockholding)			-0.0203 (0.0236)	
Outside and reputable board chair	-0.0169 (0.0286)	-0.0196 (0.0277)	-0.0202 (0.0283)	-0.0196 (0.0274)

Table 4 (continued)**Effect of frustrating action on abnormal stockholder wealth from a hostile bid: expected stockholder-wealth effect**

Initial-offer or target-firm characteristic	Expected abnormal stockholder wealth			
	(1)	(2)	(3)	(4)
Board size	0.0008 (0.0072)	0.0004 (0.0074)	0.0010 (0.0071)	0.0006 (0.0071)
Split board	-0.0950 (0.0595)	-0.0981 (0.0618)	-0.0919 (0.0564)	-0.0979 (0.0618)
Aggregate outside blockholdings	-0.0003 (0.0011)	-0.0004 (0.0011)	-0.0005 (0.0011)	-0.0004 (0.0011)
Constant	-0.6604** (0.2901)	1.1931 (0.8428)	-0.5305 (0.6118)	1.1889 (0.8309)
Controls for then primary industries of target firms	Yes	Yes	Yes	Yes
Controls for announcement years of hostile bids	Yes	Yes	Yes	No
F-statistic	13.60***	51.02***	13.34***	46.41***
R ² -statistic	79.46	80.59	79.56	80.58
Observations	118	118	118	118

Table 5**Effect of frustrating action on abnormal stockholder wealth from a hostile bid: actual stockholder-wealth effect**

This table presents results (coefficients induced by a one-unit change in each of the variables) from standard linear regressions for actual abnormal stockholder wealth from a hostile bid. The sample of hostile bids is described in Tables 1 and 2. Definitions for bid and target-firm characteristics are provided in Table A1 of the Appendix. Frustrating action is described in Table 3. Frustrating action is a binary variable for whether or not a hostile bid faces at least one type of frustrating action. Controls for then primary industries of target firms are combined into four groups: oil & gas and basic materials; industrials, including technology hardware & equipment; consumer goods and healthcare; and consumer services, including software & computers services. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4) combines the strongest of these structural specifications for each of these variables. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Bid or target-firm characteristic	Actual abnormal stockholder wealth			
	(1)	(2)	(3)	(4)
Frustrating action	-0.1972** (0.0824)	-0.1881** (0.0768)	-0.2032** (0.0826)	-0.1913** (0.0768)
Multiple bidders	0.1099 (0.0980)	0.0739 (0.0956)	0.1035 (0.0984)	0.0727 (0.0932)
Failed bid	-0.0436 (0.0961)	-0.0414 (0.0930)	-0.0584 (0.0945)	-0.0520 (0.0877)
Initial premium	0.6192*** (0.0951)	0.6189*** (0.0977)	0.6286*** (0.1003)	0.6218*** (0.0977)
Cash-only initial offer	0.3705*** (0.0889)	0.4183*** (0.0876)	0.3735*** (0.0866)	0.4109*** (0.0859)
Recently exchange-listed	-0.1172 (0.1029)	-0.0799 (0.1091)	-0.1318 (0.1003)	-0.0939 (0.1079)
Stock volatility	6.3566 (4.5686)	8.0835* (4.5726)	7.6095 (4.6714)	8.2989* (4.6114)
Cash-to-assets ratio	-0.0942 (0.2498)	-0.0920 (0.2765)	-0.0141 (0.2512)	-0.0027 (0.2487)
ln(Firm size)	0.0983*** (0.0288)	0.0797** (0.0308)	0.0828*** (0.0288)	0.0841*** (0.0300)
Leverage	-0.3478 (0.2280)	-0.3696 (0.2278)	-0.3788* (0.2222)	-0.4099* (0.2412)
Asset-turnover ratio	0.1075* (0.0573)	0.1141* (0.0583)	0.0988* (0.0568)	0.1123* (0.0589)
Stock performance	0.1632 (0.1181)	0.2117* (0.1256)	0.2087* (0.1213)	0.2162* (0.1262)
Market-to-book ratio	-0.0867 (0.0708)	-0.0898 (0.0705)	-0.0820 (0.0729)	-0.0927 (0.0711)
CEO age	-0.0033 (0.0068)	-0.2188** (0.0874)		-0.2217** (0.0862)
CEO age ²		0.0021** (0.0008)		0.0021** (0.0008)
ln(CEO age)			-0.2860 (0.3540)	
CEO stockholding	0.0127** (0.0061)	-0.0097 (0.0341)		0.0141** (0.0055)
CEO stockholding ²		0.0010 (0.0013)		
ln(1 + CEO stockholding)			0.0797 (0.0535)	
Directors' aggregate stockholding	-0.0004 (0.0039)	-0.0215 (0.0160)		-0.0236 (0.0163)
Directors' aggregate stockholding ²		0.0003 (0.0003)		0.0004 (0.0003)

Table 5 (continued)**Effect of frustrating action on abnormal stockholder wealth from a hostile bid: actual stockholder-wealth effect**

Bid or target-firm characteristic	Actual abnormal stockholder wealth			
	(1)	(2)	(3)	(4)
ln(1 + Directors' aggregate stockholding)			-0.0671 (0.0507)	
Outside and reputable board chair	0.0125 (0.0791)	-0.0011 (0.0791)	0.0083 (0.0790)	0.0029 (0.0798)
Board size	0.0016 (0.0176)	0.0032 (0.0165)	0.0007 (0.0170)	0.0003 (0.0164)
Split board	-0.1057 (0.0999)	-0.1103 (0.1085)	-0.1060 (0.1008)	-0.1133 (0.1089)
Aggregate outside blockholdings	-0.0006 (0.0021)	-0.0010 (0.0021)	-0.0013 (0.0021)	-0.0010 (0.0021)
Constant	-1.8887*** (0.6932)	3.9357* (2.2978)	-0.5394 (1.4671)	4.0025* (2.2699)
Controls for then primary industries of target firms	Yes	Yes	Yes	Yes
Controls for announcement years of hostile bids	Yes	Yes	Yes	No
F-statistic	6.00***	25.68***	5.54***	25.11***
R ² -statistic	62.43	65.94	62.75	65.63
Observations	119	119	119	119

Table 6**Effect of frustrating action on abnormal stockholder wealth from a hostile bid: endogeneity**

This table presents results (coefficients induced by a one-unit change in each of the variables) from an instrumental variable (IV) linear regression for actual abnormal stockholder wealth from a hostile bid, wherein frustrating action is treated as a potentially suspect endogenous variable, and by otherwise replicating the standard regression in Column (4) of Table 5. Since frustrating action is a binary variable, probabilities of frustrating action are intermediately estimated from a probit regression for the likelihood that it is managers' preferable resistance strategy. This intermediate regression (results from which are average marginal effects induced by a one-unit change in each of the variables) in Column (1) of this table includes all the other variables, and controls, in the standard regression. In addition, the post-Cadbury variable is exploited as a naturally exogenous source of variation for estimating the probabilities of frustrating action. Post-Cadbury is a binary variable for whether or not it is mandatory for the target firm to comply with the Cadbury reforms of internal corporate-governance practice before bid rumors. The estimated probabilities of frustrating action are then used as an instrumental variable in the IV regression in Column (2) of this table. Because of the intermediate regression, the first-stage of the IV regression is not tabulated. Two-stage least squares is used to generate the results. The same approach is applied to expected abnormal stockholder wealth from a hostile bid in Columns (3) and (4) of this table, by otherwise replicating the standard regression in Column (4) of Table 4. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Bid or target-firm characteristic	Actual stockholder-wealth effect		Expected stockholder-wealth effect	
	Frustrating action	Actual abnormal stockholder wealth	Frustrating action	Expected abnormal stockholder wealth
		(1)		(4)
Frustrating action (now-instrumented)		-0.3654*** (0.1105)		-0.0025 (0.0536)
Multiple bidders	-0.3370*** (0.0412)	0.0318 (0.0785)		
Failed bid	-0.0553 (0.0687)	-0.0493 (0.0731)		
Initial premium	0.5667*** (0.1297)	0.6616*** (0.0882)	0.4471*** (0.0973)	0.5360*** (0.0498)
Cash-only initial offer	-0.2093*** (0.0609)	0.3969*** (0.0702)	-0.1629** (0.0668)	0.1200*** (0.0330)
Recently exchange-listed	-0.4403*** (0.0245)	-0.1668* (0.0962)	-0.4485*** (0.0282)	0.0460 (0.0381)
Stock volatility	-8.5628* (4.3973)	7.3265* (4.1632)	-7.5263* (4.0243)	2.3698 (1.5129)
Cash-to-assets ratio	-0.9117*** (0.3342)	0.0148 (0.2024)	-0.6937** (0.3244)	0.0406 (0.0746)
ln(Firm size)	0.0150 (0.0295)	0.0850*** (0.0274)	-0.0017 (0.0317)	0.0286*** (0.0103)
Leverage	0.3758* (0.1964)	-0.3817** (0.1888)	0.2447 (0.2416)	-0.0845 (0.0774)
Asset-turnover ratio	-0.2409*** (0.0613)	0.0920* (0.0481)	-0.2220*** (0.0475)	0.0191 (0.0200)
Stock performance	-0.0513 (0.0914)	0.1991* (0.1050)	0.0264 (0.0956)	0.0677* (0.0388)
Market-to-book ratio	0.0459 (0.0888)	-0.1065* (0.0599)	0.0112 (0.1022)	0.0102 (0.0250)
CEO age	0.2018*** (0.0587)	-0.1993*** (0.0735)	0.2119*** (0.0748)	-0.0719*** (0.0254)
CEO age ²	-0.0018*** (0.0006)	0.0019*** (0.0007)	-0.0020*** (0.0007)	0.0007*** (0.0002)
CEO stockholding	0.0460*** (0.0095)	0.0179*** (0.0045)	0.0395*** (0.0081)	0.0015 (0.0021)
Directors' aggregate stockholding	-0.0884*** (0.0323)	-0.0307** (0.0152)	-0.0658 (0.0413)	-0.0069 (0.0081)

Table 6 (continued)
Effect of frustrating action on abnormal stockholder wealth from a hostile bid: endogeneity

Bid or target-firm characteristic	Actual stockholder-wealth effect		Expected stockholder-wealth effect	
	Frustrating action (1)	Actual abnormal stockholder wealth (2)	Frustrating action (3)	Expected abnormal stockholder wealth (4)
Directors' aggregate stockholding ²	0.0009 (0.0033)	0.0005** (0.0002)	-0.0007 (0.0039)	0.0001 (0.0001)
Outside and reputable board chair	-0.2601*** (0.0530)	-0.0262 (0.0683)	-0.1642** (0.0729)	-0.0152 (0.0236)
Board size	-0.0873*** (0.0286)	-0.0040 (0.0150)	-0.0502** (0.0219)	0.0011 (0.0059)
Split board	-0.3308*** (0.0569)	-0.1600* (0.0901)	-0.3213*** (0.0718)	-0.0906* (0.0536)
Aggregate outside blockholdings	-0.0126*** (0.0026)	-0.0016 (0.0019)	-0.0112*** (0.0024)	-0.0003 (0.0010)
Post-Cadbury	0.5278*** (0.0343)		0.5539*** (0.0343)	
Constant	0.4415*** (0.0236)	3.5193* (1.9450)	0.4430*** (0.0263)	1.2831* (0.6800)
Controls for then primary industries of target firms	Yes	Yes	Yes	Yes
Chi ² statistic	585.89***	1275.45***	598.69***	2195.98***
Pseudo R ² -statistic	62.41		54.37	
R ² -statistic		63.78		80.43
F-statistic from a first-stage test of instrument validity		76.41***		46.74***
Chi ² test of endogeneity		4.82**		0.46
Observations	119	119	119	118

Table 7

Potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy: standard likelihood model

This table presents results (average marginal effects induced by a one-unit change in each of the variables) from standard probit regressions for the likelihood that frustrating action is managers' preferable resistance strategy. The sample of hostile bids is described in Tables 1 and 2. Definitions for initial-offer and target-firm characteristics are provided in Table A1 of the Appendix. Frustrating action is described in Table 3. Frustrating action is a binary variable for whether or not a hostile bid faces at least one type of frustrating action. Post-Cadbury is a binary variable for whether or not it is mandatory for the target firm to comply with the Cadbury reforms of internal corporate-governance practice before bid rumors. Controls for the primary industries of target firms are combined into four groups: oil & gas and basic materials; industrials, including technology hardware & equipment; consumer goods and healthcare; and consumer services, including software & computers services. Because of the addition of the post-Cadbury variable, there are no controls for announcement years of hostile bids. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Column (4) combines the strongest of these structural specifications for each of these variables. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Initial-offer or target-firm characteristic	Frustrating action			
	(1)	(2)	(3)	(4)
Initial premium	0.4305*** (0.1048)	0.4589*** (0.1027)	0.3686*** (0.0941)	0.4447*** (0.0971)
Cash-only initial offer	-0.1269* (0.0736)	-0.1589** (0.0656)	-0.1462** (0.0738)	-0.1646** (0.0674)
Recently exchange-listed	-0.4488*** (0.0311)	-0.4501*** (0.0278)	-0.4529*** (0.0325)	-0.4484*** (0.0281)
Stock volatility	-7.3131 (4.5677)	-7.1442* (4.0427)	-6.2481 (4.3126)	-7.7159* (4.0747)
Cash-to-assets ratio	-0.5445* (0.3219)	-0.6522* (0.3338)	-0.2479 (0.2930)	-0.6825** (0.3274)
ln(Firm size)	-0.0073 (0.0334)	-0.0007 (0.0318)	-0.0075 (0.0346)	-0.0026 (0.0319)
Leverage	0.0758 (0.2473)	0.1875 (0.2446)	0.0968 (0.2432)	0.2615 (0.2269)
Asset-turnover ratio	-0.1983*** (0.0529)	-0.2223*** (0.0468)	-0.1845*** (0.0456)	-0.2234*** (0.0477)
Stock performance	-0.0362 (0.1105)	0.0385 (0.0992)	0.0089 (0.1090)	0.0274 (0.0951)
Market-to-book ratio	0.0416 (0.1102)	0.0139 (0.1037)	0.0010 (0.1105)	0.0095 (0.1020)
CEO age	0.0085 (0.0066)	0.2052*** (0.0727)		0.2127*** (0.0736)
CEO age ²		-0.0019*** (0.0007)		-0.0020*** (0.0007)
ln(CEO age)			0.3029 (0.3266)	
CEO stockholding	0.0362*** (0.0074)	0.0584** (0.0282)		0.0387*** (0.0078)
CEO stockholding ²		-0.0008 (0.0010)		
ln(1 + CEO stockholding)			0.1954*** (0.0481)	
Directors' aggregate stockholding	-0.0713*** (0.0198)	-0.0809 (0.0521)		-0.0720*** (0.0191)
Directors' aggregate stockholding ²		0.0006 (0.0047)		
ln(1 + Directors' aggregate stockholding)			-0.2342*** (0.0786)	

Table 7 (continued)

Potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy: standard likelihood model

Initial-offer or target-firm characteristic	Frustrating action			
	(1)	(2)	(3)	(4)
Outside and reputable board chair	-0.1369* (0.0721)	-0.1552** (0.0710)	-0.1263* (0.0762)	-0.1665** (0.0687)
Board size	-0.0445* (0.0232)	-0.0519** (0.0220)	-0.0399* (0.0210)	-0.0506** (0.0222)
Split board	-0.3033*** (0.0784)	-0.3169*** (0.0728)	-0.2691*** (0.0906)	-0.3207*** (0.0718)
Aggregate outside blockholdings	-0.0100*** (0.0024)	-0.0113*** (0.0025)	-0.0088*** (0.0024)	-0.0111*** (0.0024)
Post-Cadbury	0.5698*** (0.0361)	0.5565*** (0.0328)	0.5874*** (0.0360)	0.5568*** (0.0344)
Constant	0.4401*** (0.0282)	0.4433*** (0.0262)	0.4406*** (0.0283)	0.4429*** (0.0263)
Controls for then primary industries of target firms	Yes	Yes	Yes	Yes
Chi ² statistic	502.75***	630.65***	561.98***	696.13***
Pseudo R ² -statistic	51.50	54.57	49.13	54.36
Observations	119	119	119	119

Table 8

Potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy: standard likelihood model (CEO age)

This table presents supplementary results (predictive margins and contrasts in predictive margins) from the standard regression in Column (4) of Table 7 detailing the inverted curvilinear relationship between the probability of frustrating action and CEO age. Panel A shows the probabilities of frustrating action induced by successive two-unit changes in CEO age. Panel B shows the changes in the probability of frustrating action induced by successive two-unit changes in CEO age. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

<i>Panel A: probabilities of frustrating action induced by successive two-unit changes in CEO age</i>		<i>Panel B: changes in the probability of frustrating action induced by successive two-unit changes in CEO age</i>	
CEO age	Predictive margin	Change in CEO age	Contrast in predictive margins
38	0.1129** (0.0477)		
40	0.1686*** (0.0611)	38-40	0.0557*** (0.0160)
42	0.2407*** (0.0632)	40-42	0.0721*** (0.0118)
44	0.3185*** (0.0539)	42-44	0.0778*** (0.0179)
46	0.3894*** (0.0421)	44-46	0.0709*** (0.0215)
48	0.4458*** (0.0349)	46-48	0.0563*** (0.0189)
50	0.4852*** (0.0325)	48-50	0.0395*** (0.0146)
52	0.5083*** (0.0322)	50-52	0.0231* (0.0118)
54	0.5161*** (0.0332)	52-54	0.0078 (0.0117)
56	0.5091*** (0.0371)	54-56	-0.0070 (0.0143)
58	0.4869*** (0.0466)	56-58	-0.0222 (0.0188)
60	0.4484*** (0.0639)	58-60	-0.0385 (0.0247)
62	0.3929*** (0.0879)	60-62	-0.0554* (0.0300)
64	0.3227*** (0.1128)	62-64	-0.0703** (0.0300)
66	0.2449* (0.1262)	64-66	-0.0777*** (0.0194)

Table 9

Potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy: likelihood model with sample selection

This table presents results (average marginal effects induced by a one-unit change in each of the variables) from a probit regression with sample selection for the likelihood that frustrating action is managers' preferable resistance strategy, wherein unobservable factors that increase the likelihood of observing resistance during a takeover bid are taken into account, and by otherwise replicating the standard regression in Column (4) of Table 7. Aggregate unobservable factors that when increased increase the likelihood that managers will show general hostility to a takeover bid are first estimated. General hostility is a binary variable for whether or not managers publicly reject (resist) the initial offer. This first-stage in Column (1) of this table includes all the variables (including post-Cadbury), and controls, in the standard regression, except for the split-board variable because whether or not the board is split over resisting is only observable when managers show general hostility to a takeover bid. However, for the first-stage only, the structural specification for the directors' aggregate stockholding is changed to the curvilinear structural specification because this is the strongest structural specification for this variable in the context of all takeover bids (not only those that are hostile). In addition, for estimating the aggregate unobservable factors, two new variables, bid rumors and mandatory initial offer, are used that are plausibly related to the probability of general hostility, but not to the probability of frustrating action. Bid rumors is a binary variable for whether or not a takeover bid begins with rumors. Mandatory initial offer is a binary variable for whether or not the initial offer is mandatory because the bidder acquired a stake of, or raised its toehold to, at least 30 percent. A Chi² test for including the estimated aggregate unobservable factors in the second-stage, for the probability of frustrating action, in Column (2) of Table 9 is then used. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Initial-offer or target-firm characteristic	General hostility		Frustrating action
	(1)	(2)	
Initial premium	-0.1439** (0.0658)	0.4441*** (0.1069)	
Cash-only initial offer	0.1554*** (0.0421)	-0.1624** (0.0793)	
Recently exchange-listed	-0.1145** (0.0582)	-0.4362*** (0.1521)	
Stock volatility	-5.4447** (2.1350)	-8.0032 (5.0851)	
Cash-to-assets ratio	0.1615 (0.1608)	-0.6890** (0.3219)	
ln(Firm size)	0.0831*** (0.0205)	-0.0006 (0.0399)	
Leverage	-0.3973*** (0.1191)	0.2563 (0.2346)	
Asset-turnover ratio	0.0362 (0.0282)	-0.2264*** (0.0518)	
Stock performance	-0.2160*** (0.0498)	0.0208 (0.1320)	
Market-to-book ratio	-0.0902* (0.0476)	0.0078 (0.1097)	
CEO age	0.1114*** (0.0430)	0.2174** (0.0850)	
CEO age ²	-0.0011*** (0.0004)	-0.0020** (0.0008)	
CEO stockholding	-0.0017 (0.0034)	0.0390*** (0.0077)	
Directors' aggregate stockholding	-0.0124** (0.0048)	-0.0733*** (0.0219)	
Directors' aggregate stockholding ²	0.0001*** (0.0000)		
Outside and reputable board chair	0.0628 (0.0472)	-0.1665** (0.0696)	
Board size	-0.0187 (0.0114)	-0.0520* (0.0279)	

Table 9 (continued)

Potential determinants of the likelihood that frustrating action is managers' preferable resistance strategy: likelihood model with sample selection

Initial-offer or target-firm characteristic	General hostility		Frustrating action
	(1)	(2)	
Split board		-0.3153*** (0.0953)	
Aggregate outside blockholdings	0.0008 (0.0012)		-0.0112*** (0.0026)
Post-Cadbury	-0.3613*** (0.0411)		0.5554*** (0.0735)
Bid rumors	0.2276*** (0.0471)		
Mandatory initial offer	0.1151 (0.0800)		
Constant	0.4634*** (0.0253)		0.4287** (0.1794)
Controls for then primary industries of target firms	Yes		Yes
Chi ² statistic		1290.58***	
Chi ² test for including the estimated aggregate unobservable factors in the second-stage		0.01	
Observations		668	
Censored observations		549	

Table 10**Effect of frustrating action on the likelihood of CEO turnover after a hostile bid: standard likelihood model**

This table presents results (average marginal effects induced by a one-unit change in each of the variables) from standard probit regressions for the likelihood of CEO turnover after a hostile bid. The sample of hostile bids is described in Tables 1 and 2. Definitions for bid and target-firm characteristics are provided in Table A1 of the Appendix. Frustrating action is described in Table 3. Frustrating action is a binary variable for whether or not a hostile bid faces at least one type of frustrating action. Controls for then primary industries of target firms are combined into four groups: oil & gas and basic materials; industrials, including technology hardware & equipment; consumer goods and healthcare; and consumer services, including software & computers services. CEO age, CEO stockholding, and directors' aggregate stockholding all have linear, curvilinear, and nonlinear (natural logarithmic) structural specifications in Columns (1) to (3), respectively. The regression in Columns (4) and (5) combine the strongest of these structural specifications for each of these variables. In Column (5), the variable for frustrating action is interacted with the variable for a failed bid. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Bid or target-firm characteristic	CEO turnover				
	(1)	(2)	(3)	(4)	(5)
Frustrating action	0.2721*** (0.0799)	0.2837*** (0.0738)	0.2870*** (0.0760)	0.2731*** (0.0788)	0.1967** (0.0863)
Frustrating action × Failed bid					0.3813*** (0.0808)
Multiple bidders	-0.0903 (0.0991)	-0.0985 (0.0987)	-0.0801 (0.0954)	-0.0766 (0.0969)	-0.1014 (0.0895)
Failed bid	-0.4254*** (0.0677)	-0.4155*** (0.0684)	-0.4108*** (0.0684)	-0.4118*** (0.0691)	-0.5207*** (0.0446)
Initial premium	0.0527 (0.1042)	0.0180 (0.1062)	0.0175 (0.1110)	0.0277 (0.1093)	0.0155 (0.1087)
Cash-only initial offer	-0.2028** (0.0855)	-0.1683* (0.0910)	-0.1817** (0.0877)	-0.1811** (0.0871)	-0.1781** (0.0843)
Recently exchange-listed	-0.1416 (0.0921)	-0.1114 (0.0884)	-0.1140 (0.0875)	-0.1237 (0.0874)	-0.0882 (0.0870)
Stock volatility	-3.0137 (4.4643)	-2.5957 (4.5914)	-2.9865 (4.4707)	-3.0151 (4.4759)	-1.5181 (4.3690)
Cash-to-assets ratio	0.1471 (0.3960)	0.1623 (0.4257)	0.2094 (0.3811)	0.0137 (0.4060)	-0.0938 (0.3932)
ln(Firm size)	-0.1247*** (0.0370)	-0.1366*** (0.0345)	-0.1420*** (0.0362)	-0.1319*** (0.0357)	-0.1316*** (0.0367)
Leverage	0.5708** (0.2407)	0.5723** (0.2335)	0.6046** (0.2359)	0.6172*** (0.2384)	0.5180** (0.2531)
Asset-turnover ratio	-0.1024* (0.0526)	-0.1010** (0.0511)	-0.1067** (0.0531)	-0.1058** (0.0521)	-0.1013* (0.0542)
Stock performance	-0.2373 (0.1569)	-0.2132 (0.1525)	-0.1780 (0.1508)	-0.2162 (0.1523)	-0.1558 (0.1357)
Market-to-book ratio	0.1329 (0.0822)	0.1192 (0.0776)	0.1226 (0.0789)	0.1269 (0.0797)	0.1662** (0.0779)
CEO age	-0.0096 (0.0066)	-0.1298 (0.0978)			
CEO age ²		0.0012 (0.0009)			
ln(CEO age)			-0.4668 (0.3253)	-0.4677 (0.3298)	-0.4545 (0.3112)
CEO stockholding	-0.0065 (0.0098)	-0.0440 (0.0284)		-0.0456 (0.0302)	-0.0661** (0.0287)
CEO stockholding ²		0.0014 (0.0012)		0.0015 (0.0012)	0.0022* (0.0012)
ln(1 + CEO stockholding)			-0.1121* (0.0637)		

Table 10 (continued)**Effect of frustrating action on the likelihood of CEO turnover after a hostile bid: standard likelihood model**

Bid or target-firm characteristic	CEO turnover				
	(1)	(2)	(3)	(4)	(5)
Directors' aggregate stockholding	-0.0026 (0.0059)	-0.0038 (0.0200)			
Directors' aggregate stockholding ²		0.0000 (0.0003)			
ln(1 + Directors' aggregate stockholding)			0.0095 (0.0675)	-0.0009 (0.0633)	0.0078 (0.0644)
Outside and reputable board chair	0.1130 (0.0791)	0.1028 (0.0779)	0.1045 (0.0789)	0.1084 (0.0775)	0.1109 (0.0764)
Board size	0.0606*** (0.0197)	0.0630*** (0.0191)	0.0653*** (0.0200)	0.0652*** (0.0193)	0.0721*** (0.0197)
Split board	0.0202 (0.1333)	0.0213 (0.1315)	0.0106 (0.1331)	0.0049 (0.1346)	-0.0155 (0.1446)
Aggregate outside blockholdings	-0.0046* (0.0024)	-0.0049** (0.0024)	-0.0046** (0.0023)	-0.0045** (0.0023)	-0.0041* (0.0023)
Constant	0.4559*** (0.0322)	0.4550*** (0.0315)	0.4548*** (0.0317)	0.4551*** (0.0319)	0.4533*** (0.0308)
Controls for then primary industries of target firms	Yes	Yes	Yes	Yes	Yes
Controls for announcement years of hostile bids	Yes	Yes	Yes	No	No
Chi ² statistic	56.90**	86.12***	56.42**	58.25**	54.81**
Pseudo R ² -statistic	37.24	38.90	38.57	38.19	41.59
Observations	119	119	119	119	119

Table 11**Effect of frustrating action on the likelihood of CEO turnover after a hostile bid: IV likelihood model**

This table presents results (average marginal effects induced by a one-unit change in each of the variables) from an instrumental variable (IV) probit regression for the likelihood of CEO turnover after a hostile bid, wherein frustrating action is treated as a potentially suspect endogenous variable, and by otherwise replicating the standard regression in Column (4) of Table 10. Since frustrating action is a binary variable, probabilities of frustrating action are intermediately estimated from a probit regression for the likelihood that it is managers' preferable resistance strategy. This intermediate regression in Column (1) of this table includes all the other variables, and controls, in the standard regression. In addition, the post-Cadbury variable is exploited as a naturally exogenous source of variation for estimating the probabilities of frustrating action. Post-Cadbury is a binary variable for whether or not it is mandatory for the target firm to comply with the Cadbury reforms of internal corporate-governance practice before bid rumors. The estimated probabilities of frustrating action are then used as an instrumental variable in the IV regression in Column (2) of this table. Because of the intermediate regression, the first-stage of the IV regression is not tabulated. Maximum likelihood is used to generate the results. Standard errors are in parentheses. ***, **, and * denotes statistical significance at the 1, 5, and 10 percent level, respectively.

Bid or target-firm characteristic	Frustrating action	CEO turnover
	(1)	(2)
Frustrating action (now-instrumented)		0.3885*** (0.1323)
Multiple bidders	-0.3443*** (0.0539)	-0.0587 (0.0968)
Failed bid	-0.0800 (0.0768)	-0.3996*** (0.0725)
Initial premium	0.4539*** (0.1137)	0.0103 (0.1100)
Cash-only initial offer	-0.2004*** (0.0658)	-0.1616* (0.0905)
Recently exchange-listed	-0.4364*** (0.0276)	-0.0769 (0.1038)
Stock volatility	-7.4027* (3.9973)	-2.1451 (4.4153)
Cash-to-assets ratio	-0.4971* (0.2920)	0.0030 (0.3997)
ln(Firm size)	0.0150 (0.0316)	-0.1284*** (0.0359)
Leverage	0.2928 (0.2253)	0.5809** (0.2357)
Asset-turnover ratio	-0.1748*** (0.0464)	-0.0914* (0.0552)
Stock performance	-0.1070 (0.1112)	-0.2045 (0.1517)
Market-to-book ratio	0.0410 (0.1039)	0.1397* (0.0791)
ln(CEO age)	0.5417* (0.2786)	-0.5187 (0.3203)
CEO stockholding	0.0541* (0.0305)	-0.0465 (0.0288)
CEO stockholding ²	-0.0008 (0.0011)	0.0014 (0.0012)
ln(1 + Directors' aggregate stockholding)	-0.2426*** (0.0747)	0.0091 (0.0644)
Outside and reputable board chair	-0.2404*** (0.0636)	0.1217 (0.0750)
Board size	-0.0803*** (0.0282)	0.0633*** (0.0190)
Split board	-0.3022*** (0.0772)	0.0429 (0.1358)

Table 11 (continued)**Effect of frustrating action on the likelihood of CEO turnover after a hostile bid: IV likelihood model**

Bid or target-firm characteristic	Frustrating action	CEO turnover
	(1)	(2)
Aggregate outside blockholdings	-0.0093*** (0.0022)	-0.0041* (0.0023)
Post-Cadbury	0.5636*** (0.0443)	
Constant	0.4387*** (0.0262)	0.4573*** (0.0315)
Controls for then primary industries of target firms	Yes	Yes
Chi ² statistic	552.28***	66.63***
Pseudo R ² -statistic	57.55	
Chi ² test of endogeneity		0.79
Observations	119	119