Does Mandatory Shareholder Voting Prevent Bad Acquisitions?

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Shareholder voting on corporate acquisitions is controversial. In most countries, acquisition decisions are delegated to boards, and shareholder approval is discretionary, which makes existing empirical studies inconclusive. We study the U.K. setting in which shareholder approval is imposed exogenously via a threshold test that provides strong identification. U.K. shareholders gain 8 cents per dollar at announcement with mandatory voting, or $13.6 billion over 1992–2010 in aggregate; without voting, U.K. shareholders lost $3 billion. Multidimensional regression discontinuity analysis supports a causal interpretation. The evidence suggests that mandatory voting imposes a binding constraint on acquirer chief executive officers. (*JEL* G34, K22)

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Shareholder voting is a fundamental aspect of corporate governance. Shareholder assemblies appoint corporate directors and delegate authority. Shareholders also vote directly on decisions that exceed the powers of directors. In principle, such votes might discipline self-serving or overconfident

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executives more effectively than the board. On the other hand, shareholders are often uninformed, transient, or passive. Therefore, whether voting on specific topics is an effective governance mechanism is ultimately an empirical question.[1]

In this paper we empirically examine shareholder voting on corporate acquisitions. Extensive empirical evidence shows that a large percentage of transactions involve negative returns for acquirer shareholders (Andrade, Mitchell, and Stafford 2001; Bouwman, Fuller, and Nain 2009; Harford, Humphery-Jenner, and Powell 2012) and that the losses from the worst performing deals are very large (Moeller, Schlingemann, and Stulz 2004, 2005).

Why do boards and management continue to acquire large corporate assets that are difficult to integrate and manage successfully? There are two leading explanations for this phenomenon related to the behaviour of chief executive officers (CEOs). The first evokes the traditional "separation of ownership and control" problem (Means 1931). Managers control the widely held corporation, and their private goals can conflict with those of shareholders, particularly in the case of acquisitions (Morck, Shleifer, and Vishny 1990). Managers know what they are doing and deliberately take excessive risks, particularly when they have access to cash (Jensen 1986; Harford 1999), or they can issue overpriced stock (Dong et al. 2006; Rhodes-Kropf and Viswanathan 2004; Savor and Lu 2009; Shleifer and Vishny 2003). The market for corporate control (Masulis, Wang, and Xie 2007) and the media (Liu and McConnell 2013) can help to align the incentives of managers and shareholders. The second view focuses on managerial overconfidence or "hubris." Overconfident CEOs pay too much relative to rational managers (Roll 1986), an assertion supported by empirical evidence (Malmendier and Tate 2008).

Shareholder voting provides a potential solution in both cases. Rational shareholders can veto actions driven by overconfidence, while vigilant shareholders can stop transactions motivated by private benefits. If the deterrence effect of mandatory shareholder voting is large enough, the CEO will not offer more than the reservation price of the median shareholder and will not propose projects the shareholders are unlikely to support. In equilibrium, all acquisition proposals will be approved, because deal proposals considered undesirable by shareholders will never reach the voting stage.

Such a deterrence effect poses an empirical challenge. When voting on acquisitions is a perfect deterrent, no evidence on the direct effect of voting is observable because no deals are voted down. The only effect that is potentially

[1] There is no international consensus on which decisions shareholders should vote on directly. Controversial items include capital issuance (Holderness 2015), remuneration policies ("say on pay"; Ertimur, Ferri, and Muslu 2011), voluntary delisting (Macey, O'Hara, and Pompilio 2008), and the acquisition or disposal of relatively large assets. In most countries, mergers and acquisitions (M&A) decisions are fully delegated to the board of directors (Iliev, Lins, Miller, and Roth 2015).

observable is indirect. The presence of voting will affect the pricing and/or the quantity of the deals that get announced and done.

Previous research on voting on acquisitions has only investigated one country, the United States, by comparing the announcement returns for bids that were subject to a shareholder vote with those that were not (Hsieh and Wang 2008; Ouyang 2015; Kamar 2006; Burch, Morgan, and Wolf 2004). The evidence on direct and indirect effects is inconclusive because voting on acquisitions in the United States is endogenous. Voting is only mandatory for new share issuance above 20% but not for acquisitions per se. Hence, managers can avoid a vote by funding the deal with a sufficient amount of cash or debt. In such cases, there is no direct evidence on voting because managers do not put "bad deals" to a vote. The indirect evidence is not conclusive either. Managers only put "good deals" to a vote, and these will have higher abnormal announcement returns.[2]

The ideal setting to test whether shareholder voting deters bad acquisitions and causes positive abnormal returns would involve random assignment to a voting and a non-voting group. We could then study the difference in abnormal returns between the two randomly assigned groups. In reality, there is no setting of this type because there is no practical reason for regulators to assign approval randomly.

We study the U.K. setting, where the listing authority has devised a system that is close to ideal because shareholder voting on large acquisitions is mandatory, binding, and imposed via a series of threshold tests. This institutional feature provides strong identification. Voting is assigned exogenously, and it is not a choice variable for the board or management. At the threshold, assignment is potentially as good as random, and we can apply a multidimensional regression discontinuity design (RDD).

More specifically, the U.K. Listing Rules require a vote if the company buys an asset that is large relative to the acquirer. Acquisitions are mainly assigned through "class tests." Each test employs a different measure of relative size: the ratio of gross assets, gross capital, profits, and the ratio between the consideration offered and the market capitalization of the acquirer. Deals that exceed 25% in any one test are called Class 1 transactions and require a mandatory shareholder vote. In contrast, transactions below 25% do not require a vote.[3]

Our study is based on a random sample of one-half of all acquisitions by U.K.-listed companies between 1992 and 2010 reported by Securities Data

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[2] Hsieh and Wang (2008) report that in U.S. acquisitions, funding that is structured to bypass shareholder approval is more likely to be associated with value-reducing deals. They also show that voting correlates positively with insider ownership but negatively with institutional ownership. Hence it is more likely that positive deal value causes shareholder voting rather than the reverse.

[3] There are other countries with similar rules, such as Ireland and Hong Kong, but deal frequencies are too small and often the state or families control the acquirers. In these cases, the controlling shareholders decide on the acquisition, with or without a Class 1 rule.

Corporation (SDC). There are 1,264 announcements without confounding information, of which 383 (30%) require shareholder approval. Most of the Class 1 deals went to the vote in less than a month (66%), 2% were lost to rival bidders, and about 9% were not completed for other reasons. All Class 1 resolutions in our sample were approved at the general meeting. Class 2 transactions were not put to a vote, very few were lost to rival bidders, and about 11% were not completed for other reasons.

We examine the impact of mandatory voting on acquirer shareholder returns by comparing Class 1 and Class 2 deals. We perform a simple univariate comparison and a multivariate comparison, and we compare deals close to the class assignment threshold where deals are similar in relative size and should have similar unobservable characteristics.[4]

More formally, we perform this threshold analysis in two steps: (i) We take the relative size variable that has been used in previous studies and is available for most deals in our sample (the value of the offer divided by the market capitalization of the acquirer) to confine the sample into "narrow bands" around the threshold. Effectively, we compare the smallest Class 1 and the largest Class 2 transactions. We find that Class 1 deals have significantly higher announcement returns: the difference between returns in Class 1 and Class 2 transactions is about 3%. (ii) We perform a multivariate test based on a multidimensional regression discontinuity design (MRDD).

The MRDD combines the four main variables underlying the class tests into a single metric. This metric is then related to announcement returns. If mandatory voting matters, then abnormal announcement returns as a function of this metric should change discontinuously at the 25% threshold ("jump"). As a result, Class 1 transactions just above 25% should have higher announcement returns than Class 2 transactions just below. This is indeed what we find, supporting the notion that shareholder voting causes higher returns for acquirer shareholders.

However, even under the U.K. rules, this identification strategy works only if CEOs and boards are unable to manipulate the tests by "gaming" the threshold to bypass the vote. It is implausible that a CEO can manipulate four tests, but we provide direct evidence by looking at the density distribution of the forcing variable. With successful avoidance, deals should cluster just below 25%; there should be a rise in the density function and a discontinuity. We perform visual inspection and a formal McCrary (2008) test for all announced deals and reject vote avoidance manipulation.

We also use this methodology to test for post-assignment attrition. After assignment, CEOs can stop deals they fear will not get approved by the

[4] We also perform two parametric tests and one nonparametric multivariate test: (i) in multivariate regressions we control for a large set of observable firm and deal characteristics; (ii) we examine subsamples of acquirers in the top and in the bottom size quartiles, private targets, and all-cash deals; (3) we match Class 1 to Class 2 deals using propensity scores.

shareholders. With post-assignment attrition, there would be a discontinuous drop above the threshold. The latter discontinuity would provide direct evidence of the deterrence effect of voting on the quantity of deals. However, we do not observe any discontinuity in the density of deals. We also test for balance in observable variables around the threshold and cannot reject that they are similar. This suggests that CEOs do not drop deals just above the threshold after assignment, and that deals are also similar in terms of observable characteristics across the threshold. The fact that the only difference we find at the threshold is in abnormal returns suggests that mandatory voting constrains CEOs in the amount they can offer.

In the final part of the paper, we examine the economic channel through which mandatory voting causes higher acquirer returns in more detail. Because ex post shareholders always vote with management, the effect of mandatory voting has to be indirect: to change incentives ex ante by imposing a binding constraint on acquirer CEOs. We investigate the nature of the constraint.

Consistent with the idea that mandatory voting might constrain acquirer CEOs in the amount they can offer, we find that takeover premia are smaller for publicly listed targets in completed Class 1 deals, particularly around the threshold. This interpretation is further corroborated by the fact that Class 1 acquirer returns are larger in deals with multiple bidders, which the previous literature has often associated with an increased likelihood of overpayment (e.g., Hietala, Kaplan, and Robinson 2002). We also find that fourteen out of twenty Class 1 transactions classified as "withdrawn" by SDC are cases where the Class 1 acquirer loses against an unconstrained bidder, often from the United States. In contrast, only two Class 2 deals are lost to rivals. These findings suggest that mandatory voting has a deterrence effect for acquirer CEOs who would otherwise overpay.

We conclude that mandatory shareholder voting is a governance mechanism that imposes a price constraint on acquirer managers, which is beneficial for acquirer shareholders. Class 1 deals are associated with higher acquirer shareholder returns and the magnitude of the effect is sizable. The tests based on multidimensional RDD support a causal interpretation of this finding. We find little evidence of post-assignment attrition at the threshold and direct evidence on Class 1 acquirers losing out against unconstrained rivals in bidding contests. This suggests that the prospect of a shareholder vote restrains CEOs and boards from overpaying, which implies that shareholder voting does not determine which deals are announced, but it ensures that deals are completed at lower prices than would have occurred absent the threat of mandatory voting. The evidence is also consistent with the notion that shareholder voting is a commitment device that assists management when bargaining with the target over price. The target shareholders know that the CEO is constrained by the preferences of the median acquirer shareholder. We discuss the policy implications of our results in the conclusions.

Our paper is related to a recent and growing body of literature that applies robust empirical methods to corporate governance and finance.[5] In this regard it is similar to Cuñat, Gine, and Guadalupe (2012), who use a regression discontinuity design to show that tightly contested shareholder votes lead to higher shareholder returns. However, their study focuses on advisory votes at general meetings and examines the ex post outcome of actual votes, while we consider the ex ante impact of binding mandatory votes when the outcome might have large negative consequences for shareholder wealth. Our paper is also related to studies of non-voting constraints on acquirer behavior in the United States. CEOs in the United States are more likely to abandon an acquisition following a negative stock price reaction (Luo 2005; Chen, Harford, and Li 2007; Masulis, Wang, and Xie 2007), in particular after negative media reports (Liu and McConnell 2013). Even after these non-voting constraints on CEOs, a large portion of M&A deals in the United States and elsewhere remain associated with large losses for acquirer shareholders.

1. Law and Institutions

In 2010 the U.S. food giant Kraft Inc. launched a hostile takeover bid for the U.K. target Cadbury Plc. Kraft was listed on the New York Stock Exchange and incorporated in the state of Virginia. Warren Buffett, Kraft's single largest shareholder, with a 9.4% stake, opposed the deal on the grounds that the price Kraft was prepared to pay for Cadbury was excessive and damaging for Kraft shareholders.

Warren Buffett had little influence on the outcome of the deal. The corporate law of Virginia does not give shareholders a mandatory vote on corporate acquisitions. Listing Rule 312 of the New York Stock Exchange does require a vote, but only when a company wishes to issue common stock "equal to or in excess of 20 percent of the number of shares of common stock outstanding before the issuance of the common stock or of securities convertible into or exercisable for common stock." Initially, Kraft's bid was subject to Rule 312, and the company mailed out proxy materials. After Warren Buffett voiced opposition, Kraft changed the financing terms and thus avoided the Rule 312 vote (Davidoff 2010).[6]

In general, legal scholars and deal practitioners agree that corporate acquisitions pose a threat to shareholder wealth. The legal literature then splits into two groups. One group argues that voting on acquisitions is a potential solution to the acquisitions problem (e.g., Coffee 1984; Black 1989; Black and Kraakman 2002). A second group argues that voting is not a solution and

[5] See Roberts and Whited (2013) for a survey.

[6] Davidoff (2010) also cites other tactics acquirers can use to avoid the vote—for example, issuing non-voting preference shares that are converted into common stock after the deal is complete. The acquirer could also delist, which would also be the sanction for a violation of Rule 312.

proposes alternatives (e.g., Dent 1986; Afsharipour 2012). It is ultimately an empirical question whether shareholder voting discourages bad acquisitions, and the one that we take up in this paper. What is clear, though, is that U.S. acquirers can avoid a shareholder vote without great difficulty. "Avoiding shareholder voting is the goal of most transaction planners most of the time," often based on the argument that it is cheaper and faster, in particular when bidding for public targets (Bainbridge 2012, p. 56).

In the United Kingdom, voting is mandatory when the target is large relative to the acquirer and, as we will show, the voting assignment (treatment) is exogenous. Cadbury Plc was large relative to Kraft Inc. If Kraft had been incorporated in the United Kingdom and listed on the London Stock Exchange, the U.K. rules would have imposed a mandatory vote.

1.1 U.K. Listing Rules

Section 10 of the U.K. Listing Rules requires that shareholders have a mandatory vote when a transaction is "outside the ordinary course of the listed company's business and may change a security holder's economic interest in the company's assets or liabilities" (LR 10.1.4).[7] A transaction that is not "in the ordinary course of business because of its size or incidence" (LR 10.1.5) is known as a Class 1 transaction.

What constitutes a Class 1 transaction is initially defined by four "class tests" in which each test is based on a ratio that measures the size of the target relative to the acquirer (see Appendix B). We assume that the acquirer seeks a controlling interest in the target and that the target is consolidated, so all tests apply:[8]

(i) The gross assets test: The ratio of the gross assets (total non-current assets, plus the total current assets) of the target and the acquirer.[9]

(ii) The profits test: The ratio of the absolute value of profits/losses of the target after deducting all charges except taxation and the absolute value of profits/losses of the acquirer.[10]

(iii) The consideration test: The ratio of the consideration, the amount offered to the target, and the market value of all ordinary shares of the acquirer (excluding Treasury shares). This ratio is usually referred to as "relative size" in the M&A literature.

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[7] Throughout this section, we reference the Listing Rules that were valid from July 2005 to December 2010, the end of our sample period. We discuss 1992–2005 changes in the rules below.

[8] If the acquirer purchases a controlling stake, even when it is a minority stake, under International Financial Reporting Standards (IFRS) the target is consolidated.

[9] For consolidated targets, 100% of the total non-current assets, plus the total current assets, must be used even when a smaller percentage is acquired.

[10] For consolidated targets, the absolute value of 100% of the profits/losses must be included.

(iv) The gross capital test: The ratio of the gross capital of the target and the acquirer.[11]

To calculate the ratios for assets and profits, the latest published figures must be used. The figures must also take into account any acquisition that has been made since the publication of these figures. For the consideration and the capital tests, the acquirer must use its market capitalization one day before the announcement. In each case, the Financial Services Authority (FSA) has the power to modify relevant figures—for example, the consideration—if warranted by the terms of the transaction.

On the basis of the tests, transactions are classified into four classes (LR 10.2):

(i) Class 1 transaction: A transaction where at least one of the class test percentage ratios is larger than 25%.

(ii) Class 2 transaction: A transaction where at least one percentage ratio is between 5% and 25% and no ratio is above 25%.

(iii) Class 3 transaction: A transaction where all the percentage ratios are less than 5%.

(iv) Reverse takeover: A transaction where any of the class test percentage ratios is larger than 100% or the transaction would result in a change of business, board, or voting control of the acquirer.

In case "any of the class tests produces an anomalous result or if a calculation is inappropriate to the activities of the listed company," the regulator can "substitute other relevant indicators of size, including industry specific tests" (LR 10.1 Annex 1 0G).

Once a transaction has been classified, the listing rules define the obligations for the acquirer in each case.

(i) Class 3 transactions are the least onerous. They merely require a basic notification to the regulatory information service (RIS) once the transaction has been agreed (LR 10.3).

(ii) Class 2 transactions require a more detailed notification to the RIS (LR 10.4.1). Acquirers must also publish an update if there are significant changes to the original notification (LR 10.4.2).

(iii) Class 1 transactions have all the notification requirements of a Class 2 transaction, but, in addition, the acquirer must furnish shareholders with an explanatory circular, must get prior approval for the transaction from the shareholders in a shareholder meeting, and must ensure that any agreement with the target is conditional upon shareholder approval (LR 10.5).

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[11] The gross capital of the target is the consideration plus any shares or debt securities that are not acquired. The gross capital of the acquirer is the market value of its shares plus the amount of debt issued. In both cases, all other liabilities (other than current liabilities), including minority interests and deferred taxation plus any excess of current liabilities over current assets, are added.

(iv) Reverse takeovers are treated like Class 1 transactions regarding shareholder approval (LR 10.6.1), but the FSA has the power to cancel or suspend the acquirer's listing (LR 10.6.3 and 10.6.3). We exclude such cases when they are flagged by SDC.

The rules assigning Class 1 status have applied at least since 1975, and during the sample period (1992–2010), some minor changes were applied to the ratios.[12] In October 1990, the current 25% threshold and four ratios applied: value of assets, net profits, the consideration relative to total assets, gross capital, plus a fifth ratio based on equity issued relative to equity in issue. In December 1993, the format of the Listing Rules was revised, and transactions started to occupy Section 10. As a result, from the beginning of 1994 until the end of 1998 a slightly different set of ratios was in use: net assets, net profits, consideration to net assets, consideration to market value, and gross capital. Amendment 13 to the Listing Rules that became effective on January 11, 1999, introduced the current version of the rules, but also a "turnover test" that was defined as "the turnover attributable to the assets the subject of the transaction divided by the turnover of the listed company." In 2005 the FSA deleted the turnover test because it frequently produced anomalous results (Linklaters 2004).[13]

Hence, since their introduction in the 1970s, the Class 1 rules have ensured that acquisitions by a U.K. company listed on the Main Market for targets larger than 25% relative to the acquirer in any one of the above-defined dimensions have shareholder approval.

1.2 Business practice

To understand the timeline of notifications and the role of the different parties to a Class 1 transaction, we interviewed managers, brokers, and FSA officials. In a "stylised transaction," the pre-announcement timeline is similar for Class 1 and Class 2 transactions and unobservable (Figure 1). The post-announcement timeline is observable, but only a Class 1 transaction leads to a mandatory vote (Figure 2).

At the beginning, the chief executive of the potential acquirer will contact a banker (broker) who, if the acquisition goes ahead, will typically act as sponsor.[14] The banker will look at the business plan and decide whether the

[12] In the May 1975 edition of the Listing Rules shareholder approval was required for reverse takeovers and for transactions that resulted in "changes in the operations carried out by a company". The November 1984 rules referred to these transactions as "Major Class 1." In 1990 the name "Super Class 1" was introduced. In January 1999 the classes were relabeled into their current form. The 25% threshold and the ratio tests were used throughout.

[13] Prior to 2000 the London Stock Exchange itself regulated Class 1 transactions and in 2012 the Financial Conduct Authority (FCA) took over but we refer to the FSA throughout.

[14] The role of the sponsor is regulated and supervised by the regulator. The sponsors "provide assurance to the FSA when required that the responsibilities of the listed company or applicant under the listing rules have been met" (LR 8.3.1) as of October 2009.

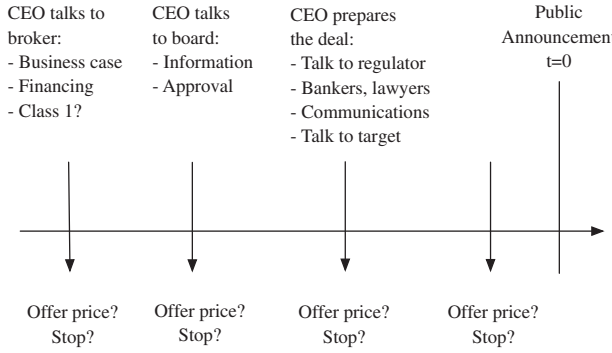

Figure 1
Pre-announcement deal timeline.
The figure depicts a stylized timeline for a U.K. acquirer from the time of the initial acquisition idea to the public announcement of the deal. The management will learn early on if the deal is considered a Class 1 or a Class 2 transaction. In a Class 1 deal the knowledge that there will be a shareholder vote should influence the discussions on the range of prices the acquirer can offer, the business case for the deal and the negotiations with the target. The pre-announcement period is not observable.

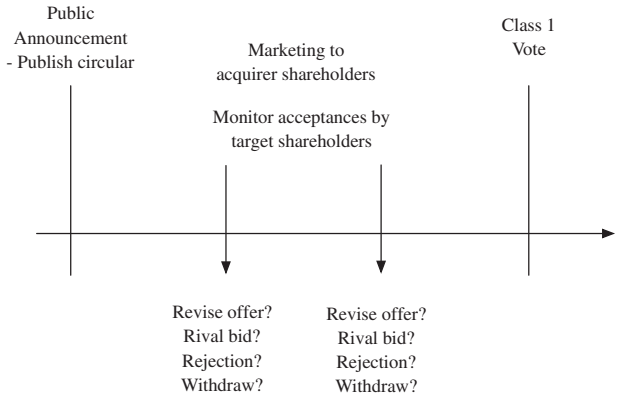

Figure 2
Class 1 announcement to shareholder vote timeline.
For a Class 1 transaction, a circular explaining the terms of the proposed acquisition and a meeting invitation are sent to the acquirer's shareholders. There will be communication with the shareholders. All announced Class 1 deals and the timeline are observable. Offers can be revised upward or downward or withdrawn at any time. Class 2 deals do not require a shareholder vote.

project is worth funding, in what form, and under which conditions. The banker will assist in determining the offer price and take a view on the potential Class 1 status of the transaction. If the deal is likely to be Class 1, the banker will also advise on the potential shareholder and proxy adviser reaction.

If the banker is content with the offer, the management will take the proposal to the board. If the board also agrees, the company will start to prepare the necessary documentation and contact the FSA to discuss the transaction. Around

six to eight weeks before the public announcement, the sponsor sends the FSA a draft circular that must be approved by the FSA before it is put into the public domain. In a cover letter, the sponsor will provide a calculation of the four ratio tests together with an explanation of the data used—with the accounting year, the date of the market capitalization valuation, and how the ratios have been calculated. It is then up to the FSA to classify the transaction as Class 1, Class 2, or otherwise. While FSA officials typically follow the calculations provided by the sponsor, they have the power to change some of the figures and apply additional tests.

Throughout the pre-announcement period, the consideration (offer price) can be revised or the deal can be stopped. If a ratio changes so that the classification of the deal might change, then the FSA must be consulted.[15] Hence, for the consideration and the gross capital test, there remains residual doubt because the denominator is only final on the last business day before the announcement. For deals that were assigned Class 1 status based on the gross assets test or the profits test, Class 1 status is almost certain.

The acquiring company has detailed knowledge about its own shareholder base. Shareholders with holdings in excess of 3% must disclose via the Regulatory News Service (RNS). In addition, the company can send letters to nominees under Section 793 of the Companies Act that force them to reveal the identity of the beneficial owners. Management and its advisers know who the bidder's shareholders are and can gauge their support. Direct contact with acquirer shareholders before the announcement is subject to strict insider trading regulation ("market abuse") and, in the case of U.K. targets, the secrecy rules of the U.K. Takeover Code. Hence, regular communication with bidder shareholders will take place only after the announcement.

Although the basic disclosure requirements for Class 2 and Class 1 acquisitions are the same, the public announcement of a Class 1 contains additional information. The former simply informs the market about a transaction; the latter needs to convince shareholders about the merits of executing the acquisition. Shareholders receive this information in the form of a Class 1 circular.[16]

Post announcement, a Class 2 transaction is completed without shareholder involvement. In the case of a Class 1 transaction, the investor relations department of the company is actively engaged in promoting the transaction to ensure a favorable outcome in the shareholder meeting. The company will carefully evaluate the market and press reaction and act accordingly. In some cases, major city institutions will hold private meetings with the bidder and, when the target is listed, with the target. Public disagreement between management and shareholders is very rare.

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[15] Prior to the "principles-based" simplification of 2005, this was spelled out explicitly in Listing Rule 10.20.

[16] The form and contents of the Class 1 circular is set out in detail in LR 13.4 and LR 13 Annex 1.

There is public scrutiny of Class 1 proposals by Institutional Shareholder Services (ISS) and other proxy advisers. When ISS evaluates a proposal, they "focus on [bidder] shareholder value, both in the immediate and long term," taking into account the offer premium, the market reaction, the strategic rationale, insider conflicts of interest, and the proposed governance of the combined entity. In particular, "a negative market reaction will be viewed with caution" (Institutional Shareholder Services 2015, p. 25).

To evaluate the involvement of proxy advisers in Class 1 transactions, we obtained vote recommendation data from ISS for all transactions that required shareholder approval for the period 2002–10. The data confirms that ISS monitors Class 1 proposals and makes recommendations. However, we only found two "against" recommendations: (i) the 2006 attempt of the car dealership Lookers Plc to take over its rival Reg Vardy Plc and (ii) the 2010 attempt of the London-listed insurance company Prudential Plc to acquire the Asian life-insurance business of the American International Group Inc. (AIG).

In the case of Lookers Plc, the company was involved in a bidding contest with its rival Pendragon Plc. Analysts commented that Lookers' final offer was highly geared and that an offer "to trump Pendragon's latest offer . . . would have stretched [Lookers] balance sheet too far."[17]

In the case of Prudential Plc, there was a –22% two-day abnormal return after the announcement of the deal. The negative recommendation from ISS was echoed by its U.K. competitor PIRC, and a public statement from a hedge fund forced the CEO to revise the offer price downward. As a result, AIG rejected the offer and the deal failed. After the deal failed the Prudential's share price reverted almost back to its pre-announcement level (see Internet appendix).

The exceptional nature of these transactions suggests that management is very good at predicting the market reaction to Class 1 announcements and that it acts very cautiously—but it is not infallible. In the next section we examine these issues systematically in the data.

2. Data

We obtain deal characteristics of all mergers and acquisitions made by acquirers listed on the Main Market of the London Stock Exchange between 1992 and 2010 from SDC's Mergers and Acquisitions database. We exclude acquirers who belong to the financial industry.[18] We merge this database with accounting information and stock returns of the acquirers from Datastream. From this population we extract a random sample with 5,400 transactions, about one-half of the total number of transactions. We then apply the following filters: we

[17] "Pendragon wins battle for Reg Vardy as Lookers pulls out," AFX News, 2006, February 6.

[18] We exclude acquirers who belong to the 11th industry group according to the 12-industry Fama-French classification code based on the four-digit SIC code.

exclude cases in which the deal value of the transaction is not reported by SDC or is less than $1 million, cases in which the deal value of the transaction as a percentage of the acquirer's capitalization is smaller than 5%, and reverse takeovers flagged by SDC.[19] The final sample contains 1,702 mergers and acquisitions.

For each of these transactions, we manually collect additional information from Factiva by reading the information that the acquirers are obliged to publicly disclose through the RNS. In particular, we record whether the transaction is subject to shareholder vote. If it is, we note (i) the reason for the vote;[20] (ii) the date of the Extraordinary General Meeting; and (iii) the outcome of the vote. We also record if potentially confounding information is released on the day of the deal announcement or within the event window—for example, an interim report. Finally, we manually correct the announcement date reported by SDC. This was necessary in 10% of the cases.

For our main analysis, we drop transactions: (i) when the acquirer has no stock returns data on Datastream or there is no information in the RNS about the transaction (79 cases), (ii) when shareholder approval is due to share issuance[21] or a related party transaction (54 cases), (iii) when interim results or other confounding news are released on the RNS (274 cases). In the final sample we have 1,264 announced transactions of which 1,109 were completed.

Table 1 describes the sample. We consider Class 1 and Class 2 transactions. For each class, we report the percentage of completed deals, "withdrawn" deals, and deals that are classified into another category by SDC. Most of the "withdrawn" Class 1 but few of the Class 2 deals were lost to a rival bidder (80% vs. 22%). There were no retracted deals. The total number of Class 1 acquisitions is 383, or 30% of our sample. We also split the completed deal sample by the time elapsed to the shareholder vote: in 66% of cases the EGM date is within one month of the public announcement.

Summary statistics by announcement year (not reported in Table 1) show that starting in 1992, the number of acquisitions increases each year until it reaches its peak in 1998 and then drops. Masulis, Wang, and Xie (2007) report a similar trend for the United States. We also split the number of acquisitions for each year into Class 1 and Class 2 transactions.

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[19] Essentially we exclude Class 3 transactions that are substantially different in the amount of information investors receive and are hardly comparable with the Class 1 transactions that are the focus of the study.

[20] Possible reasons are passing the threshold of one of the Class tests (Class 1 transaction), a transaction with a related party, or issuing a significant amount of new shares.

[21] We exclude these cases (30 acquisitions) because here the shareholder voting is not mandatory (thus exogenous) as in a Class 1 but endogenous. It comes from the choice of the acquirer to issue a substantial amount of new shares to obtain additional funding to finance the acquisition.

Table 1
Sample distribution of Class 1 and Class 2 transactions

Panel 1. Class 1 and Class 2

	N	Percentage
"Clean" acquisition announcements	1,264	
Class 1	383	30.3%
Class 2	881	69.7%
Panel 2. Completed and withdrawn		
Class 1 transactions		
Completed deals	332	86.7%
"Withdrawn" deals		
Acquired by a rival bidder	16	2.1%
Withdrawn for another reason	4	0.5%
Other	31	8.1%
Class 2 transactions		
Completed deals	777	88.2%
"Withdrawn" deals		
Acquired by a rival bidder	2	0.2%
Withdrawn for another reason	7	0.6%
Other	95	10.8%
Total completed	1,109	
Panel 3. Voted Class 1: Time elapsed from announcement to vote		
Class 1 voted transactions		
Vote within one month of announcement	221	66.6%
Vote between one month and six months	101	30.4%
Vote after six months	10	3.0%
Total	332	

The sample consists of 1,264 mergers and acquisitions (listed in SDC) announced by acquirers listed in the Main Market of the LSE between 1992 and 2010. It excludes 274 deals with confounding information that is released in the announcement window. Post-announcement deals are classified by SDC variable *status of transaction* (STATC) as completed (C), "withdrawn" (W) or having some other status (I, L, NA, P, PC, S, R, DR, U, SW), like seeking buyer, pending due to regulatory reasons, or rumor. The deals with "withdrawn" status were analyzed using Factiva and reclassified into two categories: acquired by a rival bidder and "withdrawn" for another reason—for example, worsening conditions in the target's operations. The number of voted transactions is identical to the number of completed transactions: no transaction was voted down at the relevant general meeting (typically an extraordinary meeting, but sometimes at the annual meeting).

3. Empirical Strategy and Results

The advantage of the U.K. institutional setting is mandatory shareholder approval for relatively large acquisitions. In the United States, managers can avoid a shareholder vote by altering the choice of payment or the state law under which the deal takes place.

3.1 Do shareholders vote against acquisition proposals?

It is natural to expect that shareholders will, at times, vote down acquisition proposals. In fact, we find that shareholders approve all Class 1 acquisitions put to a vote in our sample (Table 1). The result is surprising, at least initially, and consistent with two rival explanations: (i) shareholders are passive or conflicted and willing to approve any deal, including "bad" acquisitions; (ii) shareholder voting is an effective deterrent, and in equilibrium only "good" deals will be put to a vote.

Monitoring Class 1 resolutions is costly and shareholders might be rationally passive, the classic free rider problem in widely held corporations. It is also possible that acquirer shareholders are conflicted because they have holdings in the target that can compensate negative acquirer returns (Matvos and Ostrovksy 2008). In both cases, we would not expect to observe any opposition to acquisition proposal announcements. Also, the opinion of proxy advisers would have no impact. More importantly, since mandatory voting imposes no constraint, there should be no observable difference between the performance of Class 1 and Class 2 transactions.[22]

If instead mandatory voting is a deterrent, an acquisition that is considered "bad" by the acquirer's shareholders will never reach the voting stage. Deterrence will influence the acquisitions process from the minute the manager obtains the preliminary result of the combined class test from the deal adviser. If the deal is likely to be assigned Class 1 status, the potential shareholder reaction at announcement will be on the manager's mind throughout the pre-announcement period.

Prior to the announcement, the bidder can issue Section 793 notices to confirm the identity of its beneficial owners below the 3% block disclosure threshold.[23] The bidder's advisers are in a good position to assess the likely reaction of the individual decision makers based on previous Class 1 transactions. The advisers will also assess the likely reaction of ISS, Glass Lewis, Manifest, PIRC, the National Association of Pension Funds (NAPF), and other voting advisers. Managers will be cautious and try to avoid announcements that trigger a negative market reaction or a negative recommendation by a proxy adviser. As we reported in the previous section ("Business Practice"), negative market reactions to Class 1 announcements and negative recommendations from proxy advisers are very rare. We only found two "against" recommendations between 2002 and 2010 in over 400 transactions evaluated by ISS, including deals that are not included in our dataset. Proxy advisers do not scrutinize Class 2 transactions. If shareholder voting imposes a constraint, we should find that Class 1 transactions have positive and higher abnormal returns than Class 2 transactions at announcement.

After the announcement, in a Class 1 deal the manager needs to convince the bidder shareholders and the media about the business case for making the acquisition and about the consideration (offer price). The acquirer can revise the terms of the deal or retract the offer. Post announcement, the company is no longer bound by insider trading rules and the managers can meet with shareholders and the press. Acquirers can hire proxy solicitors like Georgeson and monitor the level of shareholder support. The acquisition will go to a vote

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[22] We investigated potential conflicts of interest stemming from cross-holdings for a subsample of deals and found no such evidence. These results are reported in the Internet appendix.

[23] U.K. issuers regularly issue Section 793 notices so the recipients cannot infer that a bid announcement is imminent.

only if the resolution is sure to pass. In this view, it is not the actual vote but the mere prospect of the vote that imposes a binding constraint.

Shareholders do not vote on Class 2 transactions but exert indirect oversight through the board. If companies engage in loss-making Class 2 acquisitions, shareholders could threaten to call an extraordinary meeting and hold the board accountable. There is direct evidence that the Hermes U.K. Focus Fund, an activist specialist with a small number of concentrated holdings, was extremely successful when engaging with boards in private (Becht et al. 2009). Monitoring a large number of transactions through board oversight is the task of large asset managers. There is no single issue vote, and proxy advisers do not scrutinize Class 2 deals. If informal oversight of boards by institutional shareholders imposed the same discipline as Class 1 votes, we would not observe any difference between acquirer returns for Class 1 and Class 2 deals.

In the next sections we shed light on these alternative possibilities by comparing the performance of Class 1 and Class 2 deals.

3.2 Comparison of Class 1 and Class 2 acquisitions

We measure the performance of an acquisition for the acquirer by calculating the cumulative abnormal returns (CARs) in the share price of the acquirer around the announcement of the transaction. Abnormal returns are calculated by subtracting the returns on the FTSE index from the raw return of the firm's equity.[24] Consistent with the literature (e.g., Andrade, Mitchell, and Stafford 2001; Moeller, Schlingemann, and Stulz 2004), we focus on the three-day event window around the announcement date. In particular, we compute three-day cumulative CARs during the window encompassed by event days (–1, +1), where day 0 is the acquisition announcement date. In additional tests, we use longer event windows such as (−2, +2) with essentially identical results.

3.2.1 Univariate comparison of announcement returns. In a univariate comparison of announcement returns, Class 1 acquisitions have significantly better performance than Class 2 acquisitions that are not subject to shareholder approval (Table 2, Panel 1). The mean CAR (−1,1) for Class 1 is 2.5% and 0.8% for Class 2; the respective median 1.6% and 0.5%. The difference is strongly significant in both cases.

The difference is even more striking when comparing average and total dollar returns. Class 2 deals on average have negative value, while the average for Class 1 is positive. The difference is also economically significant. The average dollar abnormal returns (in 2011 dollars) is –$3.9 million for Class 2 and +$41.2 million for Class 1. The aggregate value gained from Class 1 deals is $13.6 billion, and the aggregate value lost from Class 2 deals is $3 billion.

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[24] In short-horizon event studies, "the test statistic specification is not highly sensitive to the benchmark model of normal returns" (Kothari and Warner 2007, p. 15).

Table 2
Differences in CARs between Class 1 and Class 2 transactions

Panel 1. Differences in announcement abnormal returns

		Class 1 transactions (1)	Class 2 transactions (2)	Difference (1)–(2)	t/z-statistic mean difference test
CAR (–1,+1)	Mean	2.53	0.79	1.74	4.93***
	Median	1.60	0.46	1.14	4.05***
Dollar returns ($ millions)	Mean	41.19	−3.87	45.05	1.76*
	Median	1.57	0.49	1.08	3.06***
	Sum of values	*13,632*	*−2,958*		
	N	332	777		
Panel 2. Robustness					
CAR (–2,+2)	Mean	2.66	1.05	1.61	3.60***
	Median	2.00	0.35	1.65	3.93***
	N	332	777		
CAR (–1,+1) after winsorization	Mean	2.46	0.82	1.64	4.93***
	Median	1.60	0.46	1.14	4.05***
	N	332	777		
CAR (–1,+1) including cases with confounding information	Mean	2.05	0.96	1.09	2.88***
	Median	1.10	0.51	0.59	2.64***
	N	446	937		

This table reports cumulative abnormal returns (CARs) for 1,109 completed deals in the three days around the announcement of the acquisition (in %). Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. We also report inflation-adjusted (base 2011) dollar returns in millions obtained by multiplying the market capitalization of the acquiring firm the day before the announcement with the cumulative abnormal returns in the three days around the announcement. We split the sample between Class 1 and Class 2 transactions. We also report the results for a (–2,2) event window, the (–1,1) event window but after winsorization at 1%, and in the (–1,1) event window but including cases that we filter out because of confounding information. We report t-statistics for the difference of the means and the Wilcoxon signed-rank z-statistics for the difference of the medians. *, **, and *** denote significance at the 10%, 5%, and 1%, levels, respectively.

The difference in announcement returns between Class 1 and Class 2 also holds if we winsorize the CARs at 1%, if we enlarge the event window to (–2, +2) or if we include the cases that we filtered out because of the release of confounding information in the (–1,1) announcement window (Table 2, Panel 2).

3.2.2 Multivariate comparison. The higher returns for Class 1 observed in the univariate setting could reflect the correlation of acquirer returns with other determinants. In this section we control for such potential influences of observable covariates in a multivariate regression framework. Variable definitions are reported in Table A1 in the Appendix and descriptive statistics in the Internet appendix.

Table 3 reports the results of multivariate OLS regressions of cumulative abnormal returns (CAR) in a three-day event window (–1, +1) on acquirer and deal characteristics, with standard errors clustered by acquirers. We report three regression specifications for the full sample of completed deals. The basic model (1) contains an intercept, a Class 1 dummy, and industry and year dummies as explanatory variables. Model (2) adds deal characteristics, and Model (3) adds acquirer characteristics. Four additional models test for robustness in specific subsamples.

Table 3
Multivariate analysis of acquirer returns

Dependent variable CAR

	Full sample	Full sample	Full sample	Acquirer bottom size quartile	Acquirer top size quartile	Private targets	All-cash deals
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Class 1	1.80***	2.41***	2.48***	2.13*	1.86*	2.36***	1.72***
	(4.71)	(5.60)	(5.61)	(1.92)	(1.97)	(3.43)	(2.60)
Relative size		−0.01	−0.01	−0.01∗	0.03	−0.01	−0.00
		(−1.13)	(−1.09)	(−1.70)	(1.32)	(−1.64)	(−0.63)
Stock		−0.38	−0.30	2.35∗	1.07	0.12	
		(−0.70)	(−0.53)	(1.88)	(0.82)	(0.15)	
All cash		−0.17	−0.10	1.43	0.44	−0.59	
		(−0.47)	(−0.28)	(1.49)	(0.61)	(−1.08)	
Private		0.17	0.14	−0.36	−0.00		−0.42
		(0.50)	(0.39)	(−0.35)	(−0.00)		(−0.84)
Public		−1.44**	−1.43**	−4.77**	−0.25		−0.09
		(−2.17)	(−2.01)	(−2.04)	(−0.19)		(−0.09)
Hostile		−3.67∗	−3.47	0.00	−4.91	0.00	−3.66**
		(−1.70)	(−1.56)	(.)	(−1.04)	(.)	(−2.25)
Industry activity		−0.00	0.00	−0.01	−0.02***	0.00	0.00
		(−0.07)	(0.03)	(−0.58)	(−2.88)	(0.65)	(0.06)
Cross border		0.22	0.27	−3.48**	1.34*	−0.10	0.36
		(0.61)	(0.72)	(−2.53)	(1.80)	(−0.19)	(0.68)
Merger		−0.58	−0.50	−0.34	−0.76	−0.14	−0.71
		(−1.46)	(−1.23)	(−0.36)	(−0.81)	(−0.26)	(−1.41)
Diversifying		0.52	0.53	2.14**	0.57	1.03*	0.80
		(1.34)	(1.33)	(2.12)	(0.69)	(1.89)	(1.58)
Multiple bidders		−1.59	−1.66	−8.97***	−7.31***	−0.50	1.36
		(−0.87)	(−0.92)	(−2.73)	(−3.23)	(−0.28)	(1.37)
Firm size			−0.17	2.34***	−0.84**	−0.19	−0.26
			(−1.16)	(2.78)	(−2.18)	(−0.74)	(−1.53)
Tobin's q			0.12	−0.17	0.61	0.15	0.69∗∗
			(0.56)	(−0.41)	(1.25)	(0.38)	(2.35)
Free cash flow			1.76	5.28	6.13	−0.10	−3.34
			(0.82)	(1.22)	(1.40)	(−0.03)	(−1.42)
Leverage ratio			−0.30	−1.34	2.35	0.31	−1.19
			(−0.18)	(−0.31)	(0.83)	(0.12)	(−0.58)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	−0.32	−0.37	1.55	−22.91**	7.86	0.86	4.22
	(−0.41)	(−0.45)	(0.75)	(−2.61)	(1.43)	(0.27)	(1.61)
N	1109	971	941	185	264	502	430
R^2	0.07	0.10	0.11	0.27	0.29	0.12	0.17

Multivariate analysis is conducted for 1,109 completed acquisitions (listed in SDC) made by acquirers listed on the main market of the LSE between 1992 and 2010. This table reports the results of ordinary least squares (OLS) regressions with standard errors clustered by acquirer. The dependent variable is the CAR in the event window (–1,+1). Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. Class 1 is a dummy variable equal to 1 if the acquisition is a Class 1 transaction. All other variables are defined in Table 3. All three models include year and industry fixed effects. In model 1 we use as an independent variable only the dummy variable *Class 1*. In Model 2 we control for deal characteristics. In Model 3 we control also for acquirer characteristics. In Panel B we look at four subsamples: (i) deals where the size of the acquirer is in the bottom quartile of the distribution, (ii) deals where the size of the acquirer is in the top quartile of the distribution, (iii) deals where the target is a private company, (iv) deals where the mean of payment is only cash. T-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

The difference in CARs between Class 1 and Class 2 transactions is comparable to the univariate results. The coefficient on the Class 1 dummy in Model 1 is 1.8% and significant. When we introduce controls, the magnitude of the coefficient increases to 2.4% and remains highly significant. The coefficient

for public targets is –1.5% and significant. The coefficient for multiple bidders is relatively large and negative (–1.6%), but not significant. These results are consistent with the notion that public targets and targets in multiple bidders' situations have bargaining power (Eckbo 2009). We will use this insight when we analyze potential channels to explain the higher average performance of Class 1 deals in Section 4.3.

The results for Model 3 are similar. In general, the controls have signs that are consistent with previous studies (e.g., Moeller, Schlingemann, and Stulz 2004; Netter, Stegemoller, and Wintoki 2011), but most of them are not statistically significant. For instance, paying for a relatively large target with stock is associated with lower returns. When we examine the subsamples in Models (4)–(7), Class 1 deals are still positively and significantly associated with acquirer returns.

3.2.3 Nonparametric matching. In this section we further address the possibility that the multivariate results were driven by observable variables that affect both Class 1 status and acquirer returns, and we apply several versions of a nonparametric propensity score matching method. The idea is to estimate the counterfactual outcomes of individuals by using the outcomes from a subsample of "similar" subjects from the control group, where "similar" is defined in terms of observable characteristics (Imbens 2004). In our case we want to compare the Class 1 transactions with the closest Class 2 transactions according to all the variables that we are able to observe.

Relative to the multivariate tests of Table 3, the propensity score matching method relaxes the assumption of linearity in the relationship between shareholder voting and deal performance. We estimate the propensity score as the probability of being a Class 1 transaction conditional on the covariates through a logit regression.[25] The list of covariates that we include is the following: relative size, stock, public, hostile, industry activity, diversifying, multiple bidders, firm size, Tobin's q, free cash flow, and leverage ratio. The balancing property, by which observations with the same propensity score have the same distribution of observable covariates independently of treatment status, is satisfied. Since we only consider one measure of relative size (deal value divided by market capitalization of the acquirer), we observe several Class 1 cases with a relative size smaller than 25%. For this reason, the data satisfy the overlap condition between the treatment and the comparison group.

We then estimate the average treatment effects for the treated (Class 1) transactions given the propensity score using different matching techniques (kernel, nearest neighbor, and radius matching). The results in Table 4 confirm

[25] Since we only consider one measure of relative size (deal value divided by market capitalization of the acquirer), we observe several Class 1 cases with a relative size smaller than 25%. For this reason, the data satisfy the overlap condition between the treatment and the comparison group.

Table 4
Class 1 and Class 2 transactions: Propensity score matching

Method	*N* of treated (Class 1)	*N* of control (Class 2)	ATT	*t*−statistic
Kernel	332	777	1.32	2.07**
Nearest neighbor	332	229	1.69	2.74***
Radius	229	637	1.55	3.52***

The sample consists of 1,109 completed mergers and acquisitions (listed in SDC) made by acquirers listed on the Main Market of the LSE between 1992 and 2010. The dependent variable is the cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition (in percent). This table reports the average treatment effects for the treated where the treatment is Class 1 status. We use three different matching techniques: kernel method, nearest neighbor, and radius matching method. The standard errors are bootstrapped (200 replications). *ATT* refers to the average treatment effect for the treated Imbens (2004). The estimation was performed using the Stata propensity score (pscore) module (Becker and Ichino 2002).

our earlier results: transactions subject to shareholder approval are associated with significantly higher returns for acquirer shareholders.

3.2.4 Narrow bands. We have found that Class 1 transactions are associated with larger acquirer returns than Class 2 and that this result is robust to a number of parametric and nonparametric tests. In this section we start to address the possibility that our results so far are driven by omitted variables or reverse causality. Class 1 transactions are, by definition, larger in relative size. Shareholder voting is mandatory for Class 1, and this status is assigned independently of deal performance, but are we really capturing the deterrence effect of mandatory shareholder voting or just differences in relative size?

We have already controlled for relative size in the preceding analysis, but Class 1 status and the relative size of the target might correlate with some unobservable characteristics—for example, CEO ability or growth opportunities. As a result, superior Class 1 performance could be explained by the unobservable characteristics and not by the impact of shareholder voting. To address this concern, we compare deals that are close to the 25% threshold. Acquirer and target pairs have, by definition, very similar relative size, and they should have similar unobservable characteristics as well.

We perform this threshold analysis in two steps. (i) In this section, we restrict the sample to the smallest Class 1 and the largest Class 2 transactions in terms of relative size, as measured by the deal value divided by the market capitalization of the acquirer. (ii) In the next section, we compare deals that are close to the threshold by using four class ratios (multivariate MRDD). The first approach has the advantage of using the forcing variable with the largest number of non-missing values but omits cases that were assigned by one of the other ratios. This is corrected in the second approach, but only for a smaller sample.

In the "narrow bands" analysis (Table 5), we restrict the sample to a subset of large Class 2 transactions with a relative size above 15% and small Class 1 transactions with a relative size below 35%. These transactions are thus similar in terms of relative size but differ in terms of shareholder voting. In the

Table 5
Class 1 and Class 2 transactions in narrow bands

Panel 1. Univariate differences in announcement abnormal returns

		Small Class 1 transactions (1)	Large Class 2 transactions (2)	Difference (1)–(2)	t/z-statistic for the tests tests of difference
CAR (–1,+1)	Mean	2.98	0.76	2.07	3.33***
	Median	2.60	0.54	2.06	2.83***
Dollar returns ($ million)	Mean	33.47	–9.71	43.18	1.43
	Median	2.58	0.41	2.17	2.39**
	Sum of values	*5,858*	*–1,164*		
	N	175	120		

Panel 2. Multivariate analysis of differences in announcement returns

	Dependent variables CAR		
	(1)	(2)	(3)
Class 1	2.47***	3.42***	3.74***
	(3.42)	(4.59)	(4.51)
Deal controls	No	Yes	Yes
Acquirer controls	No	No	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	295	295	284
R^2	0.12	0.22	0.24

This table reports cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition (in %). To conduct the Class 1 and Class 2 comparison in the vicinity of the mandatory voting threshold, the full sample is reduced to include only large Class 2 transactions with a relative size larger than 15% and small Class 1 transactions with a relative size smaller than 35%. Panel 1 reports the univariate analysis. Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. We report t-statistics for the difference of the means and the Wilcoxon signed-rank z-statistics for the difference of the medians. We report also inflation-adjusted (base 2011) dollar returns in millions obtained multiplying the market capitalization of the acquiring firm the day before the announcement by the cumulative abnormal returns in the three days around the announcement. Panel 2 reports the multivariate analysis (OLS regressions with standard errors clustered by acquirer). The dependent variable is the CAR. All the three models include year and industry fixed effects. Model 1 only includes the dummy variable *Class 1*. Model 2 controls for deal characteristics. Model 3 also controls for acquirer characteristics. The control variables are the same as those used in Table 4. T-statistics are in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

univariate comparison, the mean CAR for Class 1 is 3% but only 0.8% for Class 2 and the difference is significant, while the medians are 2.6% and 0.5%, respectively. In the multivariable analysis, the Class 1 dummy is 2.5% to 3.7%, depending on the controls, and significant.

These results are statistically and economically very similar if: (i) we calculate the relative size using the market capitalization the day before the announcement; (ii) we take a linear combination of the two; (iii) we change the definition of the narrow bands and include only transactions smaller than 35% of relative size; (iv) we winsorize the CARs at 1%; (v) we enlarge the event window to (–2,+2); or (vi) we include the cases that we filtered out because of the release of confounding information in the (–1,1) event window.

Also in the narrow bands sample, Class 1 transactions are associated with value gains and Class 2 with value loss. The average dollar abnormal return (in 2011 dollars) is –$9.71 million for Class 2 and $33.47 million for Class 1. These values are similar to those for the two subsamples as a whole.

3.2.5 Regression discontinuity design. The regression discontinuity design (RDD) takes the narrow bands idea to the limit by seeking to confine the comparison to a very narrow band, say (25%–ε, 25%+ε), and computing the limit for $\varepsilon \to 0$. In our case we have a forcing variable with four components. Hence, we need to extend the usual RDD approach and apply a multidimensional RDD design.

To replicate the actual assignment set out in Section 2 as closely as possible, we construct the four component variables from SDC and Datastream: the ratio of total assets, the ratio of profits, relative size (defined as the consideration offered as a proportion of the market capitalization of the acquirer), and the ratio of "gross capital." If any one of these four ratios exceeds 25%, then the transaction is more likely to be classified as Class 1 and subject to shareholder approval. More formally, a proposed transaction is more likely to be Class 1 and subject to shareholder voting when the following is true:

$$Class\ 1(x) = \begin{cases} 1 \text{ if } x_1 \geq x_1' | x_2 \geq x_2' | x_3 \geq x_3' | x_4 \geq x_4' \\ 0 \text{ otherwise,} \end{cases}$$

where Class 1 is a dummy variable set to 1 if the transaction is Class 1 and to 0 if it is Class 2; x_1, x_2, x_3, x_4 are the four component variables that mimic the Class ratios employed by the regulator (relative size, relative profits, relative asset and relative gross capital); and $x_1' = x_2' = x_3' = x_4' = 25\%$ are the thresholds for each of the tests. Missing data for x_2, x_3, and x_4 reduces the sample size substantially to 249 transactions.

The MRDD methodology was first introduced in Papay, Willett, and Murnane (2011), and its implementation in our paper follows Reardon and Robinson (2012) and Wong, Steiner, and Cook (2013). To map the four class tests into a single number, we construct a new forcing variable, M. M is defined as the maximum of the four component variables corresponding to the class tests when each variable is centered on the 25% threshold:

$$M = max(R_1 R_2 R_3 R_4)$$

where $R_i = x_i - x_i'$ for i=1,2,3,4. M is a continuous, observable variable, and the Class 1 dummy can be rewritten as a function of M:

$$Class\ 1(M) = \begin{cases} 1 \text{ if } M \geq 0 \\ 0 \text{ otherwise} \end{cases}$$

Hence, given M, we can use single forcing variable regression discontinuity methods to estimate the effect of the treatment on cases close to M.

M does not determine the Class 1 assignment perfectly, but the assignment is "fuzzy": there are 17 transactions with $M \geq 0$ that we know are Class 2, and 12 transactions with $M < 0$ we know are Class 1. As discussed in Section 1.1, this could be due to the FSA adjusting the variable values, the additional turnover test that was dropped in 2005 because it often yielded anomalous results, or

additional ratios employed by the FSA to correct for such anomalous results not observable to us. When necessary the FSA "overrides" M in both directions and introduces an element our forcing variable cannot measure.[26] Hence we employ "fuzzy RDD" that assumes a discontinuity in the probability of treatment at the cutoff $M = 0$. The discontinuity becomes an instrumental variable for treatment status instead of determining treatment in a deterministic manner (Imbens and Lemieux 2008; Angrist and Pischke 2008).

For the instrument to be valid, management must be unable to manipulate the forcing variables. As discussed in Section 3.1, if voting is a deterrent, then management has an incentive to artificially push the four class test ratios below 25% and avoid the Class 1 assignment. In this case, deals would cluster just below $M = 0$, and we would observe a discontinuity. To investigate this possibility, Figure 3, Panel 1, reports a McCrary (2008) plot of M that includes the observations with "fuzzy" assignment. No discontinuity is visible.

However, M might only appear to be smooth because the FSA has a "Class 1 bias" that cancels out the CEOs' Class 2 bias, a general concern with this type of plot (Roberts and Whited 2013). To test for this possibility, Panel 2 plots M without the cases that were assigned by the FSA in contradiction with the class ratios or incorrectly observed by us due to data errors. If the FSA had a "Class 1 bias," we should now observe the CEOs' Class 2 bias because the two opposing effects no longer cancel out. In fact, M continues to be smooth. The formal McCrary (2008) test of threshold manipulation also rejects the null hypothesis of the existence of discontinuity in the density function in both cases.

The McCrary plots also shed light on possible post-assignment attrition around the threshold. CEOs might be unable to influence the value of M or the decision of the FSA, but they can decide to stop a Class 1 transaction once they learn that it will be subject to shareholder approval. In this case there would be a dropoff in the density just above $M = 0$. This effect would be reinforced by a possible Class 1 bias of the FSA. Again, perhaps surprisingly, the smoothness of M around the threshold suggests that there is no post-assignment attrition.

Next we turn to the analysis of the outcome variable abnormal returns using the nonparametric version of fuzzy MRDD. We obtain the local average treatment effect by constructing a Wald estimator—namely, the ratio between the jump in the performance and the jump in the probability of treatment at the cutoff $M = 0$. To further ensure that our results reflect variation in a neighborhood of the threshold, we restrict the sample to observations such that $-25 \leq M \leq 25$. The subsample consists of 174 transactions.

Table 6 show that around $M = 0$ there is a large jump in the probability that a given deal is assigned Class 1 status. Furthermore, Panel 1 also shows that there is a positive and statistically significant jump in the outcome variable around $M = 0$, so that Class 1 deals have higher CARs than Class 2 deals,

[26] It is also possible that some of the "fuzzy" assignments stem from errors in the value of $x_1 x_2 x_3 x_4$ obtained from SDC and Datastream. There is no reason to believe that such errors are not random.

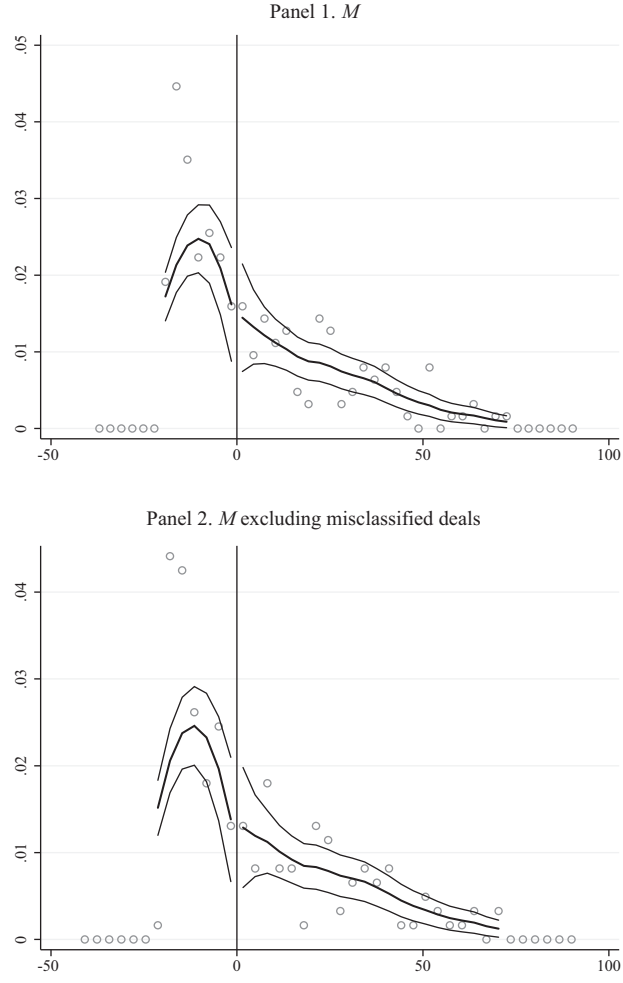

Figure 3
McCrary density plots for assignment variables.
There are four class tests of relative size that determine if there is a mandatory vote for a U.K. acquirer. If any one of four ratios (relative size [*RS*], relative profits [*RP*], relative total assets [*RTA*], and relative gross assets [*RGA*]) is larger or equal to 25% shareholder approval is required. We center each variable on its threshold of 25%. The panels below report two McCrary (2008) density tests of manipulation of the assignment variables at the 0% threshold. The tests are run on the multivariate assignment variable $M = \text{Max}(RS,RP,RTA,RGA)$. Panel 2 eliminates the misclassified deals on the two sides of the threshold.

particularly when using the optimal bandwidth calculated following Imbens and Kalyanaraman (2012). The Wald estimator is positive and statistically significant in all specifications, and this result holds also for various choices of the bandwidth.

To confirm the internal validity of this result we perform a number of tests. For the outcome variable, we report placebo tests using different "fake"

Table 6
Class 1 and Class 2 transactions: Regression discontinuity design

Panel 1. MRDD estimates

	Fuzzy MRDD			Placebo test	
	$M=0$ (1)	$M=0$ (2)	$M=0$ (3)	$M=-5$ (4)	$M=5$ (5)
Jump in outcome (CAR)	3.91**	3.25	3.05*	−2.89	0.87
	(1.97)	(1.55)	(1.71)	(−1.44)	(0.38)
Jump in the probability of treatment (Class 1)	0.50*	0.60**	0.51**	0.18	−0.45
	(1.92)	(2.26)	(2.18)	(0.383)	(−1.52)
Ratio (local Wald estimator)	7.83*	5.40**	5.95*	−15.73	−1.92
	(1.93)	(2.19)	(1.82)	(−0.68)	(−0.41)

Panel 2. Balance tests on covariates at $M=0$

	Coefficient	*t*-stat
Industry activity	−16.23	−0.58
Stock	−0.40	−0.49
All cash	0.74	1.63
Private	−0.38	−0.49
Public	0.52	0.71
Merger	−0.24	−0.98
Diversifying	0.05	0.07
Cross border	0.67	1.39
Firm size	3.72	1.02
Tobin's q	−2.13	−1.09
Free cash flow	−0.16	−1.24
Leverage ratio	0.11	0.52

Panel 1 reports estimates of the jump in the CARs in the three days around the announcement, the jump in probability of Class 1 treatment around $M=0$, and the ratio of the two. M is defined as the maximum of the four assignment variables corresponding to the Class tests (where each variable is first centered around its threshold of 25%). Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. On the two sides of the cutoff, local regressions using a triangle kernel are estimated. Estimates are based on the use of the optimal bandwidth calculated following Imbens and Kalyanaraman (2012). Models 2 and 3 are obtained with different bandwidths (± 30% of optimal bandwidth). Panel 1 reports two placebo tests: the treatment effect is calculated at placebo thresholds of $M=-5$ and $M=5$. Panel 2 reports average treatment effects of RDD (with optimal bandwidth) using each covariate (*Firm Size, Hostile, Industry activity, Cross border, Tobin's q, Free cash flow, Leverage ratio, All stock, All cash, Private, Public, Merger,* and *Diversifying*) as a dependent variable. The subsample is restricted to transactions with M between –25% and 25% (174 cases). The estimation was performed using the Stata *rd* module (Austin 2011).

thresholds and show that around $M=-5$ and $M=5$ (Panel 1 of Table 6) there is discontinuity neither in the probability of Class 1 treatment nor in the outcome. To test for local continuity in the forcing variable, we already reported the results of McCrary tests. In addition, we also test for similarity in observable characteristics on both sides of $M=0$ by replacing the outcome variable with observable covariates in a RDD regression. In Panel 2 of Table 7, these balance tests show that we cannot reject similarity in the observable covariates (firm size, industry activity, cross border, Tobin's q, free cash flow, leverage ratio, all stock, all cash, private, public, merger, diversifying) around $M=0$. These findings provide further evidence that deal quality and acquirer characteristics do not jump at the threshold. The only significant jumps at the threshold are in the probability of assignment to Class 1 status and in the acquirer abnormal returns.

Table 7
Takeover premia

		Class 1	Class 2	Difference
Panel 1. Full sample				
Target premium one day (%)	Mean	36.16	39.50	–3.34
	Median	33.59	31.37	2.22
Target premium one week (%)	Mean	41.67	43.57	–1.90
	Median	39.78	34.54	5.24
N		76	36	
Panel 2. Narrow bands				
Target premium one day (%)	Mean	33.31	52.52	–19.21*
	Median	31.51	46.94	–15.43
Target premium one week (%)	Mean	39.32	53.56	–14.24
	Median	34.31	48.22	–13.91
N		33	8	

This table reports takeover premia for target shareholders in one day and one week following the announcement of the acquisition. The results are reported for the whole sample of takeovers with publicly listed targets (Panel 1). Also, to conduct the Class 1 and Class 2 comparison in the vicinity of the mandatory voting threshold the full sample is then reduced to only include large Class 2 transactions with a relative size larger than 15% and small Class 1 transactions with a relative size smaller than 35% (Panel 2). *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Estimates in Table 7 come from local linear regressions on the two sides of the cutoff, using triangle kernel and optimal bandwidth calculated following Imbens and Kalyanaraman (2012). In a recent paper, Calonico et al. (2014) also suggest running local linear regressions using a triangle kernel, but propose an alternative methodology to determine optimal bandwidths and compute confidence intervals. We also implement the methodology of Calonico et al. (2014) and report the results in the Internet appendix. The results are very similar.

The MRDD results indicate that voting has a causal effect on acquirer returns because it limits the price managers can offer in Class 1 transactions. Managers cannot offer more than the reservation price of the median bidder shareholder. The quantity of offers is not affected at the threshold, and the presence of voting does not affect the types of deals that take place. The MRDD result is indirect evidence that voting on acquisitions protects acquirer shareholder wealth, assuming that acquirer shareholders do not hold shares in the target.

3.3 Additional evidence on the pricing cannel

Our results so far show that mandatory shareholder voting causes higher abnormal announcement returns for acquirer shareholders. In Section 4.2.5 we found that Class 1 and Class 2 completed deals around the 25% assignment threshold are very similar in observable characteristics. We also found no change in the frequency of deals around the threshold. These findings are consistent with restraint on the offer price as the economic channel that explains the positive jump in abnormal returns at announcement. In this section we present further evidence on this indirect effect.

First we examine takeover premia for target shareholders. If mandatory voting makes CEOs refrain from overpaying, we expect target shareholders to enjoy higher takeover premia in Class 2 deals relative to Class 1 deals. In Table 7 we examine this possibility by looking at takeover premia for shareholders in a subsample of publicly listed targets.

We do find that the premium for target shareholders is somewhat lower in Class 1 relative to Class 2 deals. In the whole sample, the one-day (one-week) average premium is 36.2% (41.7%) for Class 1 target shareholders and 39.50% (43.6%) for target shareholders in Class 2 deals. If we examine medians, the sign is reversed, but if we examine narrow bands around the 25% threshold, the differences have the predicted sign and are large. Average premia are 33.3% for target shareholders in Class 1 and 52.52% in Class 2 transactions in the one-day window, and 39.3% and 53.6% in the one-week window. Differences in median premia are also sizable: 31.5% vs. 46.9% in the one-day window, and 34.3% vs. 48.22 in the one-week window. The difference in mean premium is statistically significant at the 10% level for the one-day premium. This effect is also consistent with the notion that Class 1 votes act as a commitment device that strengthens the bidder management's bargaining position vis-à-vis that target.

Second, we examine acquirer returns in deals with multiple bidders. Prior literature has pointed to the fact that acquirers are particularly likely to overpay in deals with multiple bidders. Therefore, if a deterrence mechanism is at work, we expect acquirer returns to be larger in Class 1 deals relative to Class 2 deals, particularly in deals with multiple bidders (as opposed to a single bidder). Table 8 presents the results. While there are few deals with multiple bidders in the United Kingdom (29 announced and 14 completed), the available evidence does show that acquirer returns are larger in Class 1 than in Class 2 deals, particularly when there are multiple bidders. In particular, the difference in dollar returns between Class 1 and Class 2 deals is 5.84% ($974 million) when there are multiple bidders, while it is only 1.90% ($17.30 million) when there is a single bidder. Therefore, while the evidence is more suggestive than conclusive on the particular mechanisms at work, the available data does point to a deterrence effect of mandatory shareholder voting that makes CEOs and boards more likely to refrain from overpaying.

Third, we investigate the deals classified as "withdrawn" by SDC using Factiva. We did not find any case in which the acquirer management withdraws (retracts) the deal due to the opposition of its shareholders. Instead, in 80% of the cases (16 out of 20), after the announcement of the deal, other competitors offering a higher price appear and, at some point, during the bidding contest the Class 1 acquirer refuses to increase the price, leaves the competition, and thereby withdraws the deal. In 14 out of the 16 bidding contests, the winner is not constrained by a Class 1 rule. This is consistent with mandatory voting imposing a binding constraint on acquirer CEOs on the price they are allowed to pay for the target. The reasons for withdrawal in the four remaining

Table 8
Acquirer returns with multiple and single bidders

		Class 1	Class 2	Difference
Panel 1. Only completed deals				
Multiple bidders	CAR (–1,+1)	−0.46	−6.30	5.84
	Dollar returns ($ million)	768.00	−206.00	974.00
	N	12	2	
Single bidders	CAR	2.70	0.80	1.90
	Dollar returns ($ million)	14.00	−3.30	17.30
	N	320	775	
Difference	CAR (–1,+1)	−3.16	−7.10	3.94
	Dollar returns ($ million)	745.00	−202.70	956.70
Panel 2. All announced deals				
Multiple bidders	CAR (–1,+1)	−1.20	−0.93	−0.27
	Dollar returns ($ million)	217.00	−59.00	276.00
	N	23	6	
Single bidders	CAR	2.20	0.85	1.35
	Dollar returns ($ million)	12.00	−4.00	16.00
	N	360	875	
Difference	CAR (–1,+1)	−3.40	−1.78	−1.62
	Dollar returns ($ million)	205.00	−55.00	260.00

This table reports cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition of transactions with multiple and single bidders. The results are reported for completed deals (Panel 1) and for all announced deals (Panel 2). We split the sample between Class 1 and Class 2 transactions. Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity.

cases are: inability to secure financing (2), worsening conditions in target's operations (1), and rejection by the target/disagreement over price (1).

We also analyze the nine withdrawn Class 2 deals. Here we could find only two out of nine cases where the acquirer withdrew the deal because it refused to increase the price in a bidding war (the winners in the two cases are not from the United Kingdom). Other deals were withdrawn for: denied approval by the Monopolies and Merger Commission (1), industry problems (1), and target refusal of the offer (3). The last two deals were probably misclassified as "withdrawn" because we find evidence of completion.

Taken together, these results are consistent with a deterrence effect of mandatory voting that makes acquirer CEOs refrain from overpayment. Around the threshold, our results therefore appear to be driven by the fact that under shareholder voting the same deals are completed at lower prices than would happen absent shareholder voting.

4. Conclusions

Self-dealing or overconfident managers make acquisitions that the acquirer shareholders would not approve if they were asked. We study the effectiveness of shareholder voting as a corporate governance mechanism that might deter such value-reducing acquisitions. Previous studies could not overcome the endogenous nature of shareholder approval in the United States. We meet this challenge by focusing on the United Kingdom, where acquisitions that exceed

Table 9
Variable definitions

Variable	Definitions
CAR (–1,+1)	Cumulative abnormal returns, calculated by subtracting the FTSE index from the raw return of the firm's equity, in the three days around the announcement of the acquisition.
Class 1	Dummy variable: 1 for Class 1 acquisitions, 0 otherwise.
Deal characteristics	
Stock (dummy)	Dummy variable: 1 for at least partially stock financed deals, 0 otherwise.
All cash (dummy)	Dummy variable: 1 for purely cash-financed deals, 0 otherwise.
Private (dummy)	Dummy variable: 1 for private targets, 0 otherwise.
Public (dummy)	Dummy variable: 1 for public targets, 0 otherwise.
Hostile (dummy)	Dummy variable: 1 for hostile deals, 0 otherwise.
Industry activity	Number of target firms with the same first three-digit SIC code acquired each year.
Cross border (dummy)	Dummy variable: 1 for non-U.K. targets, 0 otherwise.
Merger (dummy)	Dummy variable: 1 for mergers, 0 for acquisitions.
Diversifying (dummy)	Dummy variable: 1 if bidder and target do not share a Fama-French industry, 0 otherwise.
Multiple bidders (dummy)	Dummy variable: 1 if there are multiple bidders, 0 otherwise.
Acquirer characteristics	
Firm size	Log of book value of total assets.
Tobin's q	Ratio of the acquirer's market value of assets over its book value of assets, where the market value of assets is computed as the book value of assets minus the book value of common equity plus the market value of common equity.
Free cash flow	Operating income before depreciation minus interest expense minus income taxes minus capital expenditures, scaled by book value of total assets.
Leverage ratio	Book value of long-term debt and short-term debt divided by the market value of total assets.
Class tests	
Relative size	Deal value from SDC divided by the market capitalization of the acquirer as reported by Datastream in the year end prior to deal announcement.
Relative gross assets	Total assets of the target divided by total assets of the acquirer as reported by SDC and Datastream.
Relative profits	Pretax income of the target divided by pretax income of the acquirer as reported by SDC.
Relative gross capital	Deal value plus liabilities of the target divided by market capitalization of the acquirer plus liabilities of the acquirer as reported by SDC and Datastream.

a series of exogenous size thresholds are defined as Class 1 transactions and require shareholder approval for completion.

We find a significant difference in the performance of Class 1 and Class 2 transactions. Abnormal announcement returns for Class 1 transactions are positive and larger than those for Class 2 transactions that are not subject to a shareholder vote. The finding is robust to a large set of controls for confounding effects. Further tests based on the multidimensional regression discontinuity design show that voting causes higher acquirer returns and not the reverse. In terms of economic significance, we find that Class 1 transactions are associated with an aggregate gain to acquirer shareholders of $13.6 billion, while Class 2 transactions are associated with an aggregate loss of $3 billion.

Our results indicate that mandatory shareholder voting generates substantial value improvements for acquirer shareholders. The evidence is consistent with a deterrence effect of voting; in our sample, shareholders never voted against

Class 1 transactions ex post. Mandatory shareholder voting on acquisitions is a credible threat, because the vote is triggered automatically by the relative size (Class 1) tests; CEOs and boards can predict the reservation price of the shareholders. Furthermore, the institutional shareholder base is known to the management, Class 1 votes are scrutinized by proxy advisers, the vote is binding, and there is no legal uncertainty. Because voting is an effective deterrent, there is no "smoking gun" and the evidence is indirect. We found little evidence that the deal flow is affected by shareholder approval. The evidence suggests that voting imposes a constraint on the price that CEOs and boards can offer in a Class 1 transaction.

Given the above results, why is mandatory voting on relatively large acquisitions not adopted more widely among issuers? Under freedom of contracting, acquirer shareholders could be better off by writing a mandatory voting provision into the corporate charter. This would be the case, for example, in the United States under Delaware law. In practice the necessary charter amendment would require board approval and therefore the same frictions that explain the negative returns for acquirer shareholders—overconfidence and moral hazard—might explain why we do not see such charter amendments. In other countries, company law and listing rules simply do not foresee the possibility of mandatory voting on acquisitions. Acquirer shareholders would have to lobby more effectively to get the tools that would allow them to protect their wealth.

References

Afsharipour, A. 2012. A shareholders' put option: Counteracting the acquirer overpayment problem. *Minnesota Law Review* 96:1018–99.

Aghion, P., and J. Tirole. 1997. Formal and real authority in organizations. *Journal of Political Economy* 105:1–29.

Andrade, G., M. Mitchell, and E. Stafford. 2001. New evidence and perspectives on mergers. *Journal of Economic Perspectives* 15:103–20.

Angrist, J. D., and J.-S. Pischke. 2008. *Mostly harmless econometrics: An empiricist's companion*. Princeton, NJ: Princeton University Press.

Bainbridge, S. M. 2012. *Mergers and acquisitions*. St. Paul, MN: Foundation Press.

Becht, M., J. Franks, C. Mayer, and S. Rossi. 2009. Returns to shareholder activism: Evidence from a clinical study of the Hermes U.K. Focus Fund. *Review of Financial Studies* 22:3093–3129.

Becker, S. O., and A. Ichino. 2002. Estimation of average treatment effects based on propensity scores. *Stata Journal* 2:358–77.

Black, B. S. 1989. Bidder overpayment in takeovers. *Stanford Law Review* 41:597–660.

Black, B. S., and J. C. Coffee. 1994. Hail Britannia?: Institutional investor behavior under limited regulation. *Michigan Law Review* 92:1997–2087.

Black, B. S., and R. Kraakman. 2002. Delaware's takeover law: The uncertain search for hidden value. *Northwestern University Law Review* 96:521–66.

Bouwman, C. H. S., K. Fuller, and A. S. Nain. 2009. Market valuation and acquisition quality: Empirical evidence. *Review of Financial Studies* 22:633–79.

Burch, T. R., A. Morgan, and J. G. Wolf. 2004. Is acquiring-firm shareholder approval in stock-for-stock mergers perfunctory? *Financial Management* 33:45–69.

Calonico, S., M. D. Cattaneo, and R. Titiunik. 2014. Robust nonparametric confidence intervals for regression-discontinuity designs. *Econometrica* 82:2295–2326.

———. 2015. rdrobust: An R package for robust inference in regression-discontinuity designs. *R Journal* 7:38–51.

Chen, X., J. Harford, and K. Li. 2007. Monitoring: Which institutions matter? *Journal of Financial Economics* 86:279–305.

Coffee, J. C., Jr. 1984. Regulating the market for corporate control: A critical assessment of the tender offer's role in corporate governance. *Columbia Law Review* 84:1145–1296.

Cuñat, V., M. Gine, and M. Guadalupe. 2012. The vote is cast: The effect of corporate governance on shareholder value. *Journal of Finance* 67:1943–77.

Davidoff, S. M. 2010. Warren Buffett's lost vote. *New York Times*, January 21.

Dent, G. W., Jr. 1986. Unprofitable mergers: Toward a market-based legal response. *Northwestern University Law Review* 80:777–806.

Dong, M., D. Hirshleifer, S. Richardson, and S. H. Teoh. 2006. Does investor misvaluation drive the takeover market? *Journal of Finance* 61:725–62.

Eckbo, B. E. 2009. Bidding strategies and takeover premiums: A review. *Journal of Corporate Finance* 15:149–78.

Ertimur, Y., F. Ferri, and V. Muslu. 2011. Shareholder activism and CEO pay. *Review of Financial Studies* 24:535–92.

Harford, J. 1999. Corporate cash reserves and acquisitions. *Journal of Finance* 54:1969–97.

Harford, J., M. Humphery-Jenner, and R. Powell. 2012. The sources of value destruction in acquisitions by entrenched managers. *Journal of Financial Economics* 106:247–61.

Harford, J., D. Jenter, and K. Li. 2011. Institutional cross-holdings and their effect on acquisition decisions. *Journal of Financial Economics* 99:27–39.

Hietala, P., S. N. Kaplan, and D. T. Robinson. 2002. What is the price of hubris? Using takeover battles to infer overpayments and synergies. *Financial Management* 32:5–31.

Holderness, C. 2015. Equity issuances and agency costs: The telling story of shareholder approval around the world. Working Paper, Boston College.

Hsieh, J., and Q. Wang. 2008. Shareholder voting rights in mergers and acquisitions. Working Paper, Georgia Institute of Technology.

Hu, H. T. C., and B. Black. 2007. Hedge funds, insiders, and the decoupling of economic and voting ownership: Empty voting and hidden (morphable) ownership. *Journal of Corporate Finance* 13:343–67.

Iliev, P., K. V. Lins, D. P. Miller, and L. Roth. 2015. Shareholder voting and corporate governance around the world. *Review of Financial Studies* 28:2167–2202.

Imbens, G. W. 2004. Nonparametric estimation of average treatment effects under exogeneity: A review. *Review of Economics and Statistics* 86:4–29.

Imbens, G. W., and K. Kalyanaraman. 2012. Optimal bandwidth choice for the regression discontinuity estimator. *Review of Economic Studies* 20:1–27.

Imbens, G. W., and T. Lemieux. 2008. Regression discontinuity designs: A guide to practice. *Journal of Econometrics* 142:615–635.

Institutional Shareholder Services. 2015. United Kingdom and Ireland proxy voting guidelines: 2015 benchmark policy recommendations. Available at https://www.issgovernance.com/file/policy/2016-uk-and-ireland-proxy-voting-guidelines-dec-2015.pdf.

Jensen, M. C. 1986. Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76:323–29.

Kamar, E. 2006. Does shareholder voting on acquisitions matter? American Law & Economics Association Annual Meetings.

Kothari, S. P., and J. B. Warner. 2007. The econometrics of event studies. In *Handbook of corporate finance: Empirical corporate finance*. Ed. B. E. Eckbo. Amsterdam: Elsevier North Holland.

Linklaters. 2004. *Listing rules review and implementation of the prospectus directive*. London.

Liu, B., and J. J. McConnell. 2013. The role of the media in corporate governance: Do the media influence managers' decisions to abandon acquisition attempts? *Journal of Financial Economics* 110:1–17.

Luo, Y. 2005. Do insiders learn from outsiders? Evidence from mergers and acquisitions. *Journal of Finance* 60:1951–82.

Macey, J., M. O'Hara, and D. Pompilio. 2008. The law and economics of the delisting process. *Journal of Law and Economics* 51:683–713.

Malmendier, U., M. M. Opp, and F. Saidi. 2016. Target revaluation after failed takeover attempts: Cash versus stock. *Journal of Financial Economics* 119:92–106.

Malmendier, U., and G. Tate. 2008. Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics* 89:20–43.

Masulis, R. W., C. Wang, and F. Xie. 2007. Corporate governance and acquirer returns. *Journal of Finance* 62:1851–89.

Matvos, G., and M. Ostrovsky. 2008. Cross-ownership, returns, and voting in mergers. *Journal of Financial Economics* 89:391–403.

McCrary, J. 2008. Manipulation of the running variable in the regression discontinuity design: A density test. *Journal of Econometrics* 142:698–714.

Means, G. C. 1931. The separation of ownership and control in American industry. *Quarterly Journal of Economics* 46:68–100.

Moeller, S. B., F. P. Schlingemann, and R. M. Stulz. 2004. Firm size and the gains from acquisitions. *Journal of Financial Economics* 73:201–28.

———. 2005. Wealth destruction on a massive scale? A study of acquiring-firm returns in the recent merger wave. *Journal of Finance* 60:757–82.

Morck, R., A. Shleifer, and R. W. Vishny. 1990. Do managerial objectives drive bad acquisitions? *Journal of Finance* 45:31–48.

Netter, J., M. Stegemoller, and M. B. Wintoki. 2011. Implications of data screens on merger and acquisition analysis: A large sample study of mergers and acquisitions from 1992 to 2009. *Review of Financial Studies* 24:2316–57.

Nichols, A. 2011. Revised Stata module for regression discontinuity estimation. Available at http://ideas.repec.org/c/boc/bocode/s456888.html.

Ouyang, W. 2015. The effect of M&A advisors' opinions on acquirer shareholder voting. *Quarterly Review of Economics and Finance* 57:175–90.

Papay, J. P., J. B. Willett, and R. J. Murnane. 2011. Extending the regression-discontinuity approach to multiple assignment variables. *Journal of Econometrics* 161:203–7.

Reardon, S. F., and J. P. Robinson. 2012. Regression discontinuity designs with multiple rating-score variables. *Journal of Research on Educational Effectiveness* 5:83–104.

Rhodes-Kropf, M., and S. Viswanathan. 2004. Market valuation and merger waves. *Journal of Finance* 59:2685–2718.

Roberts, M. R., and A. Sufi. 2009. Control rights and capital structure: An empirical investigation. *Journal of Finance* 64:1657–95.

Roberts, M. R., and T. M. Whited. 2013. Endogeneity in empirical corporate finance. In *Handbook of the economics of finance*. Ed. G. M. Constantinides, M. Harris, and R. M. Stulz. Amsterdam: Elsevier.

Roll, R. 1986. The Hubris hypothesis of corporate takeovers. *Journal of Business* 59:197–216.

Savor, P. G., and Q. Lu. 2009. Do stock mergers create value for acquirers? *Journal of Finance* 64:1061–97.

Shleifer, A., and R. W. Vishny. 2003. Stock market driven acquisitions. *Journal of Financial Economics* 70:295–311.

Wong, V. C., P. M. Steiner, and T. D. Cook. 2013. Analyzing regression-discontinuity designs with multiple assignment variables: A comparative study of four estimation methods. *Journal of Educational and Behavioral Statistics* 38:107–41.