Does Mandatory Shareholder Voting Prevent Bad Acquisitions?

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Shareholder "referendum" voting on 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. where approval is mandatory for large deals. 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. In the U.S., where voting is discretionary, shareholders lost $214 billion in matched deals. Differences-in-differences and regression discontinuity analyses support a causal interpretation. The evidence suggests that mandatory voting imposes a binding constraint on acquirer CEOs.

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1 Introduction

There is broad consensus amongst lawmakers and regulators that decisions with potentially large material consequences for shareholder wealth must be taken via an extraordinary shareholder resolution. There is no international consensus though on which decisions fall into this category. In some countries shareholders have a direct say on capital issuance[1], remuneration policies ("say on pay")[2], voluntary delisting[3], and large acquisitions. In most countries there is delegation to the board of directors or a supervisory board (Iliev, Lins, Miller, and Roth (2015)).

In the case of corporate acquisitions there is extensive empirical evidence that a large percentage of mergers and acquisitions are linked to negative abnormal 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 make large and risky acquisitions? There are two leading explanations for this phenomenon that are related to CEO behavior. The first evokes the traditional "separation of ownership and control" problem (Means (1931)). Managers control the widely held corporations 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 that is 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

[1] Holderness (2015).
[2] Ertimur, Ferri, and Muslu (2011).
[3] Macey, O'Hara, and Pompilio (2008).

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.

Research on international shareholder voting has shown that deals are more likely to be withdrawn when the percentage of international institutional holdings is high, even when voting is only advisory (Iliev et al. (2015)). Previous research on acquirer returns has only investigated one country, the United States, by comparing the announcement returns for acquisitions 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 average abnormal announcement returns for the voting group are higher when controlling for deal characteristics leading the authors to conclude that "shareholder voting rights exert significant impact on shareholder wealth" (Hsieh and Wang (2008, p. 36)).

This evidence on acquirer returns is inconclusive on whether shareholder voting deters bad acquisitions, because voting on acquisitions in the U.S. 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. Hsieh and Wang (2008) report that acquisition 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, rendering the U.S. evidence inconclusive.

The ideal setting to test whether shareholder voting discourages bad acquisitions and causes positive abnormal returns would involve random assignment to a voting and a non-voting group. The regulator would use a random number generator to determine if a corporate acquisition was subject to a mandatory shareholder vote at announcement. 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 focus on the U.K. setting where shareholder voting on large acquisitions is mandatory, binding and imposed exogenously via a series of threshold tests. This

institutional feature provides us with two complementary identification opportunities. (1) At the threshold assignment is potentially as good as random and we can apply a regression discontinuity design (RDD); (2) The absence of mandatory voting in the United States allows us to compute the difference in differences between relatively larger deals (subject to a mandatory vote in the U.K. but not in the U.S.) and relatively smaller deals (not subject to a mandatory vote) across the Atlantic.

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.[4]

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 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%) and about 5% were withdrawn beforehand. All Class 1 resolutions in our sample were approved at the general meeting. Class 2 transactions were not put to a vote and relatively few were withdrawn (1%), but about 10% 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 within the U.K. and by comparing Class 1 U.K. transactions with U.S. transactions that are matched by relative size and other deal characteristics.

In a simple univariate comparison of abnormal returns there is a large difference between Class 1 and Class 2. We find that Class 1 acquiring shareholders gain 8 cents per dollar at the announcement of the deal, for an aggregate gain of $13.6 billion over 1992-2010. In contrast, Class 2 shareholders lost $3 billion in aggregate. The differences are statistically significant.

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

One can argue that a univariate comparison is not conclusive because Class 1 deals are, by definition, relatively larger than Class 2. As a result, the Class 1 effect might simply capture the positive impact of relative size and not the impact of mandatory shareholder voting. We perform two parametric and one non-parametric robustness test: (1) In multivariate regressions we control for a series of firm and deal characteristics such as relative size, means of payment, Tobin's Q, free cash flow, leverage, the private or public status of the target and whether the deal is hostile, cross border, diversifying or has multiple bidders. (2) We examine subsamples of acquirers in the top and in the bottom size quartile, private targets, and all-cash deals. (3) We match Class 1 to Class 2 deals using propensity scores. In each case we confirm a higher abnormal return for Class 1 deals. The economic magnitude of the return is also larger than with the simple univariate tests.

Relative size and Class 1 status might still correlate with some unobservable characteristics, for example CEO ability. As a result superior Class 1 performance could be explained by ability and not by the impact of shareholder voting. To address this concern, we compare deals that are close to the class assignment threshold where deals are similar in relative size and should have similar unobservable characteristics.

More formally we perform this threshold analysis in two steps. (1) We take the relative size variable that has been used in previous studies and is available for most deals in our sample (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 the difference in announcement returns between Class 1 and Class 2 transactions increases to 3%. (2) We perform a multivariate test based on a Multidimensional Regression Discontinuity Design (MRDD) for a more limited subsample.

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 only works 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 shareholders. With post-assignment attrition deals would not cluster below the threshold but they would exhibit a discontinuous drop above the threshold. The latter discontinuity would provide direct evidence of the deterrence effect of voting. 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 might constrain CEOs in the amount they can offer.

Next we examine U.S. acquisitions that are similar to the Class 1 deals, in terms of observable characteristics, including relative size. We repeat the exercise by comparing Class 2 deals with similar U.S. deals. This differences-in-differences strategy controls for all time-invariant economic and institutional differences between the U.K. and the U.S. and allows us to focus on the impact of mandatory shareholder voting, which only affects Class 1 deals. We find that in U.S. deals with relatively large targets shareholders lost $210 billion in aggregate. Deals with relatively small targets that do not require shareholder approval have similar returns in the U.K. and the U.S. The difference in the differences between the average values of the deals is $93 million.

In the final part of the paper we examine the channel through which mandatory voting is likely to cause higher acquirer returns. Because ex post shareholders always vote with management, the effect of mandatory voting has to change incentives ex ante by imposing a binding constraint on acquirer CEOs. We investigate the nature of the constraint.

There are two mutually non-exclusive possibilities: (1) Mandatory voting affects the quantity of completed deals. Deals are stopped before the announcement because CEOs anticipate shareholder opposition or deals are withdrawn after the announcement because shareholders actually oppose the deal. (2) Mandatory voting imposes an upper limit on the offer price. Class 1 deals are completed at lower prices than would prevail absent the threat of a negative vote.

We examine these possibilities in turn: (i) We look at deals that are withdrawn after they are announced, as these are publicly observable. We find that among the deals with the worst announcement returns, the withdrawn deals are most likely Class 1 deals; and among withdrawn deals, Class 1 performed worst. The withdrawn deals are also aimed at relatively large targets suggesting that post announcement attrition happens away from the threshold. (ii) We find that takeover premia are smaller for publicly listed targets in Class 1 deals. Therefore, we find some evidence in favor of both the quantity and the price channel but around the threshold the price effect dominates. These findings suggest that mandatory voting has a *deterrence effect* for acquirer CEOs who would otherwise overpay. This interpretation is further corroborated by our last finding that the positive effect of mandatory voting on acquirer returns is 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 conclude that mandatory shareholder voting is a governance mechanism that can prevent poor acquisitions. Class 1 deals are associated with higher acquirer shareholder returns and the magnitude of the effect is sizeable. The tests based on RDD and differences-in-differences support a causal interpretation of this finding. We find little evidence of post-assignment attrition at the threshold. This suggests that the prospect of a shareholder vote restrains CEOs and boards from overpaying in these cases, which implies that these deals are completed at lower prices than would have occurred absent the threat of mandatory voting. After announcement some deals are withdrawn, most likely because the CEO miscalculated the reservation price of the median shareholder. These deals are relatively large and far from the threshold. We present direct evidence of this interpretation in a case study, Prudential Plc's failed bid for AIA (Appendix I). 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) and 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 U.S. and elsewhere remain associated with large losses for acquirer shareholders.

The paper is organized as follows. Section 2 provides the legal and institutional framework. Section 3 describes the data. Section 4.1 examines actual voting outcomes at shareholder meetings. Section 4.2 contains baseline univariate (4.2.1), multivariate (4.2.2) and propensity score matching (4.2.3) results when comparing Class 1 and Class 2 deals. Sections 4.2.4, 4.2.5 and 4.3 address potential endogeneity concerns. Section 4.2.4 presents narrow-band comparisons around the threshold and Section 4.2.5 a formal regression discontinuity design (RDD) test. Section 4.3 reports differences-in-differences of acquirer announcement abnormal returns in the United Kingdom and the United States. Section 4.4 examines the likely channels through which mandatory shareholder voting leads to higher acquirer returns. Section 5 concludes.

2 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,

[5] See Roberts and Whited (2013) and Atanasov and Black (2014) for general surveys. Specific examples include Agrawal (2013) on investor protection, Chava and Roberts (2008) and Roberts and Sufi (2009) on debt covenant violations, Garvey and Hanka (1999), Bertrand and Mullainathan (2003) and Giroud and Mueller (2010) on antitakeover laws, Chhaochharia and Grinstein (2007) on Sarbanes-Oxley, Greenstone, Oyer, and Vissing-Jorgensen (2006) on disclosure laws, and Bakke, Jens, and Whited (2012) on delisting.

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 have argued that corporate acquisitions pose a threat to shareholder wealth and cite the relevant finance evidence. 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 proposes alternatives (e.g., Dent (1986) and Afsharipour (2012)). Of course, 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 (2009)). In other countries with strong delegation to the board, like in Germany, the situation is similar.

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.

[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.

2.1 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" (LR10.1.4). [7] A transaction that is not "in the ordinary course of business because of its size or incidence" (LR10.1.5) is known as a *Class 1 transaction.*

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

1. *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]
2. *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]
3. *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.
4. *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 test the acquirer must use its market capitalization one day before the announcement. In each case the FSA has

[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 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.
[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.

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.

a. *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);
b. *Class 2* transactions require a more detailed notification to the regulatory information service (*RIS*) (LR 10.4.1). Acquirers must also publish an update if there are significant changes to the original notification (LR 10.4.2).
c. *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).
d. *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) there were some minor changes in 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 11 January 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 Financial Services Authority (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 must have shareholder approval.

2.2 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).

[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.

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 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 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 6-8 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. The FSA decision is then final.

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 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.

In some cases the sponsor will engage in a so-called "pre-marketing process" the day before the public announcement, contacting the two or three largest fund managers in the shareholder register to inform them about the transaction and seeking their informal approval.[16]

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[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 applicant3 under the listing rules have been met" (LR 8.3.1) as of October 2009.

[15] Prior to the "principles based" simplification of 2005 this was explicit in Listing Rule 10.20.

[16] The names of the people informed about the transaction by the sponsor are put on an "insider list" which is sent to the FSA.

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.[17]

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 gauge the market and press-reaction and act accordingly. Public disagreements between management and shareholders are very rare.

A notable recent exception is 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"). There was a -22% two-day abnormal return after the announcement of the deal and significant shareholder opposition that forced the CEO to revise the offer price downwards. As a result AIG rejected the offer and the deal failed (see Appendix I and Figure 5). The Prudential case underscores that shareholder opposition can cause management to revise the terms of an offer, and even to abandon a "bad" deal. The exceptional nature of this transaction also suggests that management is very good at predicting the shareholder reaction to Class 1 deals. Class 1 deals are rarely withdrawn after they have been announced. In the next section we examine these issues systematically in the data.

3 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 the Securities Data Corporation's (SDC) 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

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

transactions. We then apply the following filters: we exclude cases where the deal value of the transaction is not reported by SDC or is less than $1 million, cases where 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 reading the information that the acquirers are obliged to publicly disclose through the Regulatory News Service (RNS). In particular we record whether the transaction is subject to shareholder vote. If it is, we note (a) the reason for the vote;[20] (b) the date of the Extraordinary General Meeting; (c) 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: a) when the acquirer has no stock returns data on Datastream or there is no information in the Regulatory News Service about the transaction (79 cases), b) when shareholder approval is due to share issuance[21] or a related party transaction (54 cases), c) where interim results or other confounding news is released on the Regulatory News Service (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 not completed for some other reason, for example because the target was purchased by a rival bidder. The total number of Class 1 acquisitions is 383, or 30% of our sample. Around 5% of the deals are withdrawn after the public announcement. 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.

[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.

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.

4 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.

4.1 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: (1) shareholders are passive or conflicted and willing to approve any deal, including "bad" acquisitions; (2) shareholder voting is an effective deterrent and in equilibrium only "good" deals will be put to a vote.

If shareholder were passive 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.

If instead mandatory voting is a deterrent an acquisition that is considered "bad" by the acquirer's shareholders will never reach the voting stage. Managers know that the proposal will be rejected and will not risk an embarrassing "no" vote at the general meeting that might damage their careers.[22] Acquirers will hire proxy solicitors and monitor the level of shareholder support. The acquisition will only go to a vote 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.

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

[22] Fos and Tsoutsoura (2014) document the negative career impact of proxy contests for U.S. managers.

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. The manager will have to convince the shareholder about the business case for making the acquisition and about the consideration (offer price). The consideration might even influence Class 2 deals that are close to the border because a large consideration might turn a Class 2 into a Class 1 deal, unless the deal has been assigned Class 1 status via the gross assets or profits test already.

After the public announcement managers and the board can observe the market reaction and enter into direct conversations with shareholders. The acquirer can revise the terms of the deal or withdraw the proposal altogether. 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.

In the United Kingdom the rare occurrence of public disputes between management, boards and shareholders is not confined to Class 1 transactions. There is a general preference to conduct shareholder activism behind closed doors (Black and Coffee (1994)). Shareholder proposals in the United Kingdom are binding but hardly any are filed (Buchanan et al. (2012)). The Hermes UK Focus Fund had a preference for conducting its interventions in private and was extremely successful in obtaining the outcomes it desired (Becht et al. (2009)). This literature suggests that institutional investors in the United Kingdom have "real authority" (Aghion and Tirole (1997)), which should be reinforced by the prospect of a Class 1 vote.

Deterrence might not be effective when shareholders are conflicted. Acquirer shareholders might weigh the negative announcement returns against positive returns on their equity stakes in the targets (Harford, Jenter, and Li (2011), Matvos and Ostrovsky (2008)). Hedge funds might even go short in the acquirer and long in the target (Hu and Black (2007)). A "bad" deal for pure acquirer shareholders could be a "good" deal for them. If there are enough conflicted shareholders, Class 1 votes will impose no constraint on management. On the contrary, conflicted shareholders might favor acquirers paying "too much". If this was true we should find Class 1 performing like Class 2 transactions or worse. In the next section we shed light on these alternative possibilities by comparing the performance of Class 1 and Class 2 deals.

4.2 Comparison between 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.[23] Consistent with the literature (e.g. Andrade, Mitchell, and Stafford (2001), Moeller, Schlingemann, and Stulz (2004)), we focus on the 3-day event window around the announcement date. In particular, we compute 3-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.

4.2.1 Univariate comparison of announcement returns

In a univariate comparison of announcement returns Class 1 acquisition 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. This comparison gives more weight to companies with larger market capitalizations and provides a better measure of the economic impact of mandatory voting. Dollar returns are computed by multiplying the market capitalization of the acquiring firm the day before the announcement with the cumulative abnormal return in the three days announcement window. 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 dollars for Class 2 and +$41.2 million dollars for Class 1. The aggregate value gained from Class 1 deals is $13.6 billion dollars, and the aggregate value lost from Class 2 deals is $3 billion dollars.

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).

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

4.2.2 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. We include measurable acquirer, target, and deal characteristics, such as the target listing status or the method of payment that previous research has shown to have explanatory power in the analysis of acquirer returns. We control for the method of payment, the target listing condition (either public, private or subsidiary), the deal status (merger vs. acquisition, hostile vs. friendly, diversifying vs. non diversifying and cross border vs. U.K. target), the relative size of the deal value with respect to the capitalization of the acquirer, the level of M&A activity in the industry of the acquirer in the year of the acquisition and whether the deal has one or multiple bidders. To account for differences in acquirer characteristics we add the size of the bidder, the leverage ratio, free cash flow and the Tobin's Q. Variable definitions are reported in Appendix I.

Table 3 reports descriptive statistics for these explanatory variables for all completed Class 1 and Class 2 deals. We find that companies making Class 1 and Class 2 transactions are very similar in terms of size, free cash flow and leverage ratio but Tobin's Q is significantly higher for Class 2 transactions. In contrast Class 1 are more often hostile, they are less cash financed, include a larger number of U.K. targets and more public and fewer private targets than subsidiaries. Class 1 also involve more deals with multiple bidders although, on the whole, these are rare.

Table 4 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) acquirer characteristics. Four additional models test for robustness in specific sub-samples: (4) deals where the size of the acquirer is in the bottom quartile of the distribution, (5) deals where the size of the acquirer is in the top quartile of the distribution, (6) deals where the target is a private company, (7) deals where cash is the only means of payment.

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 4.4.

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. The magnitude of the coefficient estimate for the Class 1 dummy is also similar across specifications: 2.1% in the bottom size quartile of acquirers, 1.9% in the top size quartile, 2.4% for deals with private targets, and 1.7% for all-cash deals. Control variables generally have the same sign as in the previous specifications. One exception is Model (4), whereby acquirers in the bottom quartile of the size distribution have negative returns from cross border deals, but positive ones from diversifying deals.

The multivariate results remain statistically and economically very similar across models when we winsorize the CARs at 1%, enlarge the event window to (-2, +2) or include the cases that were dropped because of confounding information in the (-1,1) event window.

4.2.3 Non-Parametric 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 non-parametric 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 4, 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. 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, 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 and Nearest Neighbor matching). The results in Table 5 confirm our earlier results: transactions subject to shareholder approval are associated with significantly higher returns for acquirer shareholders.

4.2.4 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 non-parametric 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: (1) 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; (2) 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 6) 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 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%-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 we 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 sub-samples as a whole.

4.2.5 Regression Discontinuity Design (RDD)

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 ε→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≥0 that we know are Class 2 and 12 transactions with M<0 we know are Class 1. As discussed in Section 2.1 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.[24] Hence we employ "fuzzy RDD" that assumes a discontinuity in the probability of treatment at the cut-off 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 4.1 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.

[24] 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.

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 drop-off 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 cut-off M=0. To further ensure that our results reflect variation in a neighborhood of the threshold, we restrict the sample to observations such that $-15 \leq M \leq 15$. The subsample now consists of 117 transactions.

Table 7 show that around M=0 there is a large jump in the probability that a given deal is assigned Class 1 status. This result holds for parametric (quadratic) and non-parametric regressions on the two sides of the thresholds. 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, 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" thresholds and show that around M=-5 and M=5 (Panel 1 of Table 7) there is neither discontinuity 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.

Our results in this section indicate that, also when using exogenous variation in shareholder voting across the cut-off Class 1 deals still outperform Class 2 deals. The RDD results have strong internal validity. By definition the external validity of RDD is limited. We address this issue by examining a different counterfactual in the next section.

4.3 Comparison with the United States

In this section we attempt to establish the economic impact of mandatory shareholder voting by examining a different counterfactual. We study the U.S. where listed companies are widely held like in the U.K. but shareholder voting on acquisitions is not mandatory. We want to investigate the performance of deals with relative size (defined as the consideration divided by the market capitalization of the acquirer) larger than 25%, and the difference in performance between these acquisitions and those smaller than 25%.[25]

There are obviously many institutional differences between the two countries (e.g., disclosure thresholds, break-up fees, rate of public auction), so that a simple comparison between the returns to acquisitions in the U.K. and in the U.S. would be inconclusive. Instead, in this section we perform a differences-in-differences analysis where the institutional differences should cancel out. We compare returns to acquisitions with relative size greater than 25% with those with relative size smaller than 25% in the U.S.; and we examine how this difference compares to the same difference in the U.K. As a result we can focus on the impact of shareholder voting, while at the same time controlling for all systematic time-invariant differences across the two countries, as well as controlling for all observable firm and deal characteristics, including relative size.

As we do for the U.K. we obtain deal characteristics of all mergers and acquisitions made by acquirers listed in the U.S. between 1992 and 2010 from the Securities Data Corporation's (SDC) Mergers and Acquisitions database. We exclude acquirers who belong to the financial industry. We merge this database with accounting information from Compustat and stock returns of the acquirers from CRSP. We then

[25] In principle, we could replicate the procedure described in Section 4.4.2 with the four assignment variables. We limit this exercise to the relative size variable simply to maximize sample size.

apply the same filters as in the U.K. sample: we exclude cases where the deal value of the transaction is not reported by SDC or is less than $1 million and cases where the deal value of the transaction as a percentage of the acquirer's capitalization is smaller than 5%. If we consider only completed acquisitions we are then left with a sample of 10,824 U.S. transactions.

4.3.1 Differences-in-differences of announcement abnormal returns

We first look at CARs in the three days window around the announcement of the acquisition (Table 8). In the same spirit as Panel 1 in Table 2 we regress the CARs on a dummy variable that is equal to 1 if the transaction has relative size larger than 25% plus the full set of controls. We find that the dummy variable is positive and highly significant.

One might conclude here that also in the United States, that does not have a Class 1 rule, transactions with a relative size of 25% or larger are in fact value increasing. It could be that when a proposed acquisition passes the 25% threshold it attracts more media attention or scrutiny shareholder activists and, for this reason, bad transactions do not go through. In what follows, we check whether this is the case.

In Column 2, we restrict the sample to transactions larger than 15% and smaller than 35%, in the same spirit of the narrow bands analysis that we perform for the U.K. Strikingly, the 25% dummy variable is no longer significant and even changes sign. In Column 3, we go back to the full sample but we now use a 100% relative size dummy.

In this case the coefficient on the dummy variable is highly significant and almost twice the size of the coefficient at the previous 25% threshold. Therefore, the evidence in Column 2 and 3 suggests that, in the U.S., the 25% threshold is not associated with any specific change of pattern in terms of quality of deals and only deals with very large relative size, larger than 100%, are associated with larger abnormal returns.

4.3.2 Differences-in-differences of announcement abnormal dollar values

Next, we look at abnormal dollar returns in the three days window around the announcement. Moeller, Schlingemann, and Stulz (2004) report that in the U.S., from 1980 to 2001, the average dollar abnormal return over the event window (-1, 1) is -$25.2 million (in 2001 dollars). We confirm these findings for U.S. acquisitions until 2001, and

we find that losses in shareholder wealth in the U.S. continue until the end of our sample, with negative peaks in 2008 and 2009. In contrast, U.K. acquisitions are characterized by much larger positive abnormal dollar returns.

In Panel 2 of Table 8 we compare the average wealth gain/loss for U.S. transactions above and below the 25% relative size threshold. We find that, also for the time period 1992-2011, acquisitions in the U.S. are, on average, associated with lost value but, more remarkably, the average loss in wealth for acquirer shareholders from transactions larger than 25% is almost six times larger than for smaller transactions (-$58 vs. -$10 millions in 2011 dollars). The same pattern is also present in narrow bands around the 25% equivalent of the U.K. threshold: the dollar loss for small relative size transactions (15-25%) is only half than for transactions with larger relative size (25-35%). The comparison of these results with the U.K., where Class 2 transactions perform worse than Class 1 and Class 1 exhibits value gains, is additional evidence that mandatory shareholder voting discourages acquisitions that imposes losses on acquirer shareholders.

To confirm this result, we match U.K. deals with U.S. deals that are similar according to observable characteristics and compare the average abnormal dollar values. Figure 4 shows that Class 1 U.K. deals gain $41 million in the aggregate, while U.S. transactions above the 25% relative size lost $58 million in the aggregate. Smaller transactions in the U.S. and in the U.K. have similar value consequences, $-10 million and $-6 million in the aggregate, respectively.

Next, we perform a formal statistical analysis of this difference. We estimate the propensity score using the following covariates: stock, public, hostile, industry activity, diversifying, multiple bidders, firm size, Tobin's Q, free cash flow, leverage ratio. We then split the sample in two according to relative size. While between 5% and 25% the performance of U.K. Class 2 transactions is indistinguishable from that of U.S. transactions, in the subsample of transactions larger than 25% there is a large and statistically significant difference in terms of dollar value creation between the U.K. and the U.S. (Panel 3 of Table 8).[26] These results are confirmed using various methods of Propensity Score matching.

[26] This result is not due to few outliers. If we winsorize the abnormal dollar returns in the US and in the UK at 1%, the ATT is $37.79 (t-stat=2.37) with Nearest Neighbor and $54.46 (t-stat=2.62) with Kernel matching.

4.4 Cross Holdings

In the previous section we showed that there are large gains from mandatory voting for acquiring shareholders by comparing the U.K. and the U.S. One concern is that acquirer shareholders may not necessarily care about their losses on their shares held in the acquirer firm, to the extent that they hold a contemporaneous position in the target firm that allows them a positive gain in the aggregate ('cross-holdings'). Therefore, if U.S. acquirer shareholders have cross-holdings in their targets to a larger extent than U.K. shareholders, we may over-estimate the gains from mandatory voting.

Matvos and Ostrovksi (2008) note that institutional ownership of equity has risen to the point where two firms frequently have several institutional investors in common, and hypothesize that such cross-holdings can explain why bidder shareholders regularly allow value-destroying acquisitions. Matvos and Ostrovsky (2008) show, in fact, that the combined dollar loss of all institutional shareholders in the acquirers is often more than offset by the combined dollar gain of all institutional shareholders in the targets. However, Harford, Jenter, and Li (2011) criticize Matvos and Ostrovsky (2008) on the grounds that the analysis in Matvos and Ostrovsky (2008) does not prove that the institutional shareholders in the acquirer and target in the takeovers in their sample are necessarily the same institutions. Importantly, Harford, Jenter and Li (2011) consider a sample of U.S. takeovers from SDC over 1984-2006 that significantly overlaps with ours. In such a sample Harford et al. (2011) examine cross-holdings in takeovers at the shareholder level, and conclude that "(t)he observed effects of cross-holdings are much too small to explain the persistence of bidder value-reducing mergers" (p.27). They find that influential shareholders with large stakes in the acquirer tend to have only small stakes in the target and, thus, care little about target value. On the other hand, shareholders with large stakes in the target tend to have only small stakes in the acquirer and are unlikely to have an impact on the decisions of the acquirer.

The remaining concern is that cross-holdings may reflect the presence of index funds, which has been increasing in recent years. If the index fund invests in both the acquirer and the target, investors in the fund might even benefit from acquirer value-reducing mergers. If in many deals in our sample the acquirer and the target are listed in an Index Fund we would overestimate the losses for this group of shareholders. For each acquirer and target in our sample we record whether it is listed or not in either the S&P 500 or the S&P 1500. Our results show that the number of takeovers where both the

acquirer and the target are listed is extremely small: 0.35% of the sample in case of the S&P 500 and 1.13% in case of the S&P 1500, suggesting that, in line with Harford et al (2011), even for index firms, the observed effects of cross-holdings are much too small to explain the persistence of bidder value-reducing mergers.

4.5 Why do Class 1 transactions have higher returns?

Our results so far show that mandatory shareholder voting causes higher abnormal announcement returns for acquirer shareholders. In this section we explore the channels that could explain why that is the case. Because ex post shareholders actually vote in favor of management 100% of the time, any effect of shareholder voting must operate though ex ante incentives.

There are two main non-mutually exclusive possibilities: (1) The prospect of mandatory shareholder approval affects the quantity of completed deals, i.e., "bad" Class 1 deals are stopped prior to announcement or withdrawn post announcement but prior to the vote; (2) Deals are completed at lower prices than they would have been absent the prospect of a vote. We examine these possibilities in turn.

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. These findings are not consistent with post assignment attrition before the announcement. Restraint on the offer price is the most plausible explanation for the positive jump in abnormal returns.

In general CEOs could withdraw deals after the announcement, for instance, after a large negative market reaction. Since these announcements are public we can fully observe these cases, and we examine them here. We find that only a small number of Class 1 deals are withdrawn after this point (fewer than 2% of all deals).

If mandatory voting forces CEOs to withdraw Class 1 deals after poor announcement returns this is what we should observe empirically. Class 2 deals should be withdrawn less often because they require no shareholder approval. The CEOs can, to some extent, ignore the negative market reaction. Also, among all withdrawn deals Class 1 should have worse returns than Class 2.

This is indeed what we find. Among the Class 1 transactions that are badly received (announcement CAR smaller than -3%), 14.5% are withdrawn by management prior to the vote. In contrast, only 1 transaction out of 108 badly perceived Class 2 transactions (0.9%) is withdrawn. A similar picture emerges when we look at withdrawn cases. In our data, there are 22 withdrawn transactions that would have been subject to a shareholder vote (Class 1), and they are indeed characterized by very negative returns: the average return is -1.7% (t-stat -1.33) and the 25th percentile is -6.1%.[27] As we show in Table 9 these returns in Class 1 withdrawn deals are much lower than the ones obtained in the nine Class 2 withdrawn cases. As a result, we do find some evidence that CEOs withdraw Class 1 deals following a large negative stock market reaction. Notice, however, that there are few deals that are publicly announced and subsequently withdrawn. Furthermore, the median withdrawn deal has a relative size of 67% (Table 9, Panel 2).

Next, we examine takeover premia for target shareholders. If mandatory voting makes CEOs refrain from overpaying, then we would expect target shareholders to enjoy higher takeover premia in Class 2 deals relative to Class 1 deals. In Table 10 we examine this possibility by looking at takeover premia for target shareholders. The analysis is limited to 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 1-day (1-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 are large. Average premia are 33.3% for target shareholders Class 1 and 52.52% in Class 2 in the 1-day window; and 39.3% and 53.6% in the 1-week window. Differences in median premia are also sizable: 31.5% v 46.9% in the 1-day, and 34.3% v 48.22 in the 1-week. The difference in mean premium is statistically significant at the 10% level for the 1-day premium.

[27] These findings do not imply that all Class 1 transactions are always well received. In fact, we find that there are 42 completed Class 1 deals that obtain a market reaction smaller than -3% at the announcement. In 38% of these, we find that the market reaction is reversed prior to the EGM vote. In the remaining 26 cases (2.3% of the whole sample), the market reaction remains negative and yet shareholders still approve them at the EGM, potentially reflecting disagreement between different groups of shareholders about the likely long-term outcome of the transaction.

Taken together, these results are consistent with a deterrence effect of mandatory voting, which 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.

To probe deeper into this possibility, 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). Panel 1 of Table 9 presents the results. While there are few deals with multiple bidders in the U.K. (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% ($974M) when there are multiple bidders, while it is only 1.90% ($17.30M) 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.

5 Conclusions

Self-dealing or overconfident managers make acquisitions that the acquiring shareholders would not approve if they were asked. We study the effectiveness of shareholder voting as a corporate governance mechanism to prevent such acquisitions from taking place. Empirical studies of this issue face the challenge of dealing with the endogenous nature of shareholder approval. We meet this challenge by focusing on the U.K. setting where acquisitions that exceed a series of exogenous size thresholds are defined as Class 1 transactions and subject to shareholder approval for completion.

We find a striking difference between the performance of Class 1 and Class 2 transactions. We find that the abnormal announcement returns for Class 1 transactions are positive and significantly larger than those for the 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 differences-in-differences and on an application of the Regression Discontinuity Design confirm 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. By way of comparison, U.S. transactions of similar size, which are not subject to shareholder approval, are associated with an aggregate loss of $210 billion for acquirer shareholders; and Class 2 U.K. transactions, also not subject to shareholder approval, are associated with an aggregate loss of $3 billion.

Our results indicate that mandatory shareholder voting generates substantial value improvements for acquiring shareholders, and suggest that mandatory voting makes CEOs and boards more likely to refrain from paying more than shareholders consider the target is worth. This mechanism works without the need for shareholders to actually vote down an acquisition proposal; 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, and CEOs and boards know in advance of the actual vote whether shareholders are going to vote "no". Furthermore, the vote is binding and the there is no legal ambiguity.[28]

The question then arises, why isn't mandatory voting on acquisitions already part of the corporate charters of publicly listed firms, in the U.S. and elsewhere? Under freedom of contracting and in the absence of frictions, corporate charters already include all amendments that maximize the wealth of shareholders. However, such a contractual solution is often not available without board approval. For example, in the U.S. under Delaware law charter amendments require approval from the shareholders *and* from the board. The same frictions that explain the negative returns for acquiring shareholders – e.g., overconfidence and self-dealing of CEOs and directors – might also explain why we do not see such charter amendments as mandatory voting on significant acquisitions already adopted in seasoned, publicly listed firms, in the U.S. and elsewhere.

[28] The U.S. analogy is the poison pill that employs a similar type of credible threat. The pill is known to be poisonous with certainty, if triggered. As a result, no poison pill has ever been triggered in the United States, yet nobody doubts its effectiveness as an anti-takeover device.

These observations suggest that, in countries in which acquirer shareholders are dissatisfied with their stock returns in corporate acquisitions, acquirer shareholders might be given the option to write a mandatory voting provision on significant acquisitions into the corporate charter ("opt-in"), without requiring board approval. We show that such a provision would, on average, improve shareholder wealth and we would expect to see it adopted in many cases. Even so, in practice, inertia, imperfect foresight and social norms might prevent a majority of shareholders from opting into a Class 1 regime. If this was the case, one could consider introducing mandatory voting on significant acquisitions as the default rule and give shareholders the right to opt out, without requiring board approval. If the only friction is board veto power, the two proposals are equivalent.

To be sure, the above proposal is quite different from mandating, by regulation or otherwise, that every (significant) acquisition is voted on.[29] The voting rule must be mandatory, conditional on the Class 1 (relative size) test; otherwise it is not a credible threat. However, the *imposition* of the rule does not have to be mandatory.

This is a subtle, but crucial, distinction. In fact, while our results show that mandatory voting makes acquiring shareholders better off on average, our results do not show that mandatory voting makes shareholders *always* better off. There can be cases in which shareholders are better off by letting CEOs and boards wide discretion over significant acquisitions. The above proposal addresses these cases, too. For example, under the "opt in" regime we would expect that in such cases acquirer shareholders will choose not to introduce a voting amendment into the corporate charter.

Finally, our results have little to say about social welfare in the broadest sense. There may be some stakeholders or constituencies that we have not examined (e.g., employees) and that, at least under some conditions, might be worse off under mandatory voting on acquisitions. Looking at mandatory voting purely from the point of view of acquirer shareholders the mandatory approval of relatively large transactions has tangible benefits.

[29] The U.K. has, of course, made voting on Class 1 transactions mandatory for companies listed on the London Stock Exchange. Justifying this policy would require arguing that there are market failures in opting-in or opting-out regimes.

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Case Study: Shareholder Opposition to Prudential Plc's Acquisition of AIG

To get a deeper understanding of the impact of mandatory voting on acquirer executive behavior we examine one prominent recent case with public shareholder opposition to Class 1 transactions. It is perhaps exceptional but illustrative.

On Monday 1 March 2010 the London listed insurance company Prudential Plc announced that it was planning to acquire the Asian life-insurance business of the American International Group Inc. ("AIG") for £24bn ($35.5bn). The deal was supposed to be partly funded in cash, but mostly through a £14.5bn rights issue.

The transaction was structured as a scheme of arrangement.[30] A new company would acquire Prudential Plc and AIA Group Limited ("AIA"), a wholly-owned subsidiary of AIG. After the acquisition the new company would assume the name Prudential plc and be headquartered and incorporated in London.

The scheme was to be arranged under Part 27 of the Companies Act of 2007. Section 907 requires that the merger had to be approved by the shareholders of Prudential Plc and AIA Group Limited (i.e. AIG). In particular, "the scheme must be approved by a majority in number, representing 75% in value, of each class of members of each of the merging companies, present and voting either in person or by proxy at a meeting". The Prudential's management had voluntarily opted into a shareholder approval standard that exceeds even Class 1. However, even if the Prudential had used the standard takeover route, the deal would have been a Class 1 transaction since at least one of the Class tests exceeded the 25% threshold. The Prudential CEO, Tidjane Thiam, knew that a shareholder vote was required and is reported to have felt very confident in the deal.

At market close on Friday 26 February Prudential Plc shares were trading at £60.25. At the close of the market on Monday the stock price had fallen by 12% to £53. At the same time the FTSE All Shares Index had risen by one percentage point, giving an abnormal return of -13% associated with the acquisition announcement. On 2 March the share price falls by an additional 8%, building up to a two day negative cumulative abnormal return of -22% relative to both the FTSE All Shares and the FTSE100 index (Figure 5). The Prudential at this point did not withdraw the offer.

[30] Schemes or arrangement for listed companies are based on Part 27 of the UK Companies Act of 2006.

Shareholder opposition to the deal became public on 26 May when proxy adviser RiskMetrics (ISS) recommended to vote against the transaction. This was followed by the Neptune fund on 27 May. Its fund manager Robin Geffen declared that he had assembled a group holding more than 10% of Prudential Plc stock to oppose the deal. The Prudential share price rose immediately. On 28 May the proxy advisor PIRC also recommended against the deal.

In an attempt to placate its own shareholders the Prudential revised its offer downward to £24bn. This revised offer was rejected by AIA on 1 June. On 2 June the Prudential abandoned the offer.

On 7 June the shareholder meeting that would have voted on the deal went ahead but the proposed acquisition was no longer on the meeting agenda. Despite initial calls for their resignation, the CEO Tidjane Thiam and the Chairman Harvey McGrath remained in office. The cost of the failed deal was £377m (Prudential Plc 2011 Annual Report).

Figure 1

Pre-Announcement Deal Timeline

The Figure depicts a stylized timeline for a UK 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.

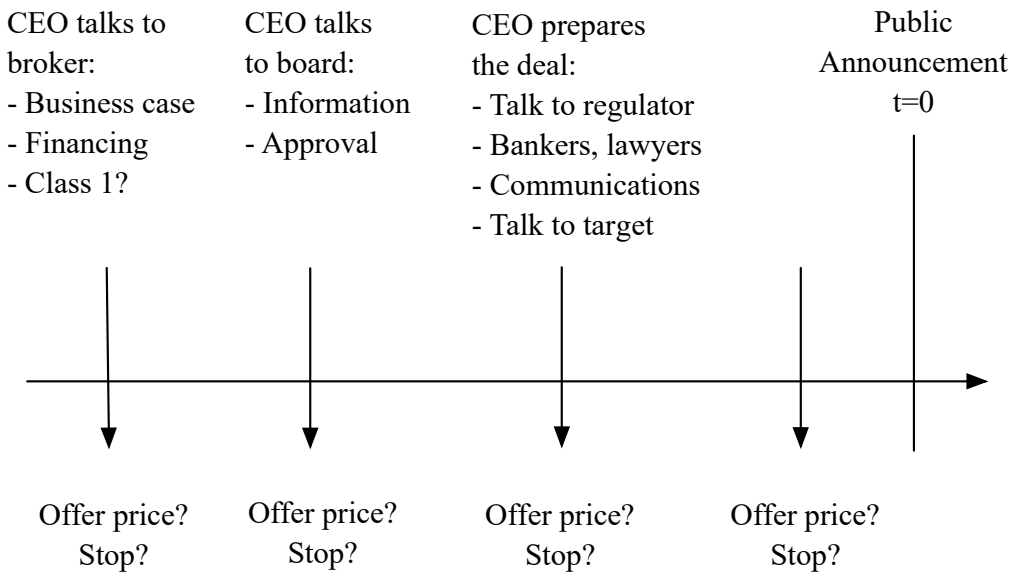


Figure 2

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.

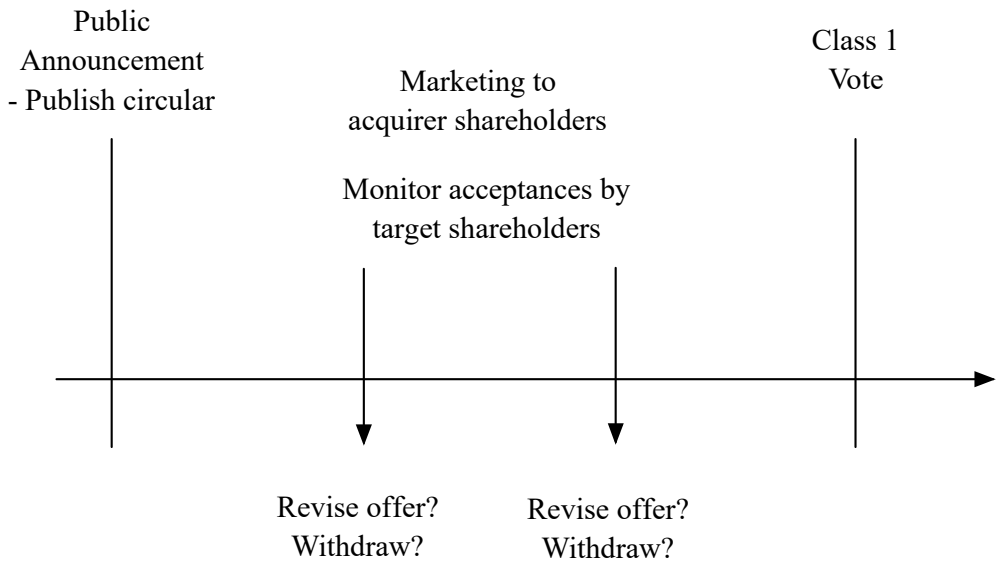
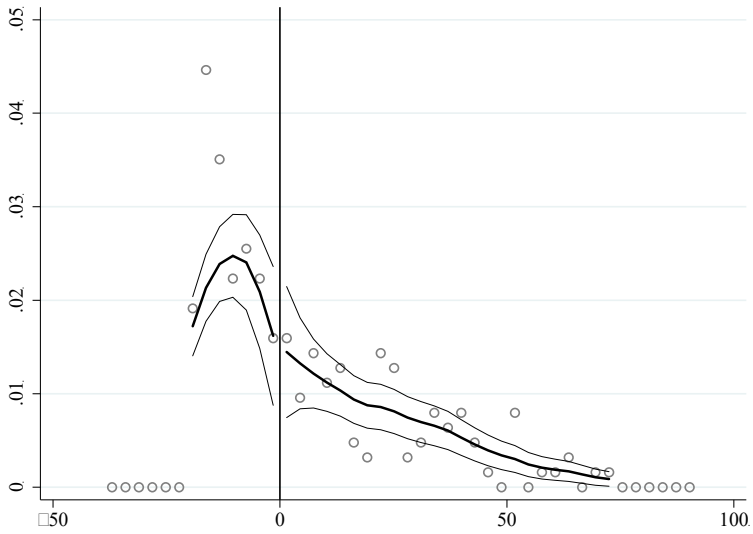


Figure 3

McCrary Density Plots for Assignment Variables

There are four class tests of relative size that determine if there is a mandatory vote for a UK 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=Max(*RS*,*RP*,*RTA*,*RGA*). Panel 2 eliminates the misclassified deals on the two sides of the threshold.

Panel 1 – M



Panel 2 – M Excluding Misclassified Deals

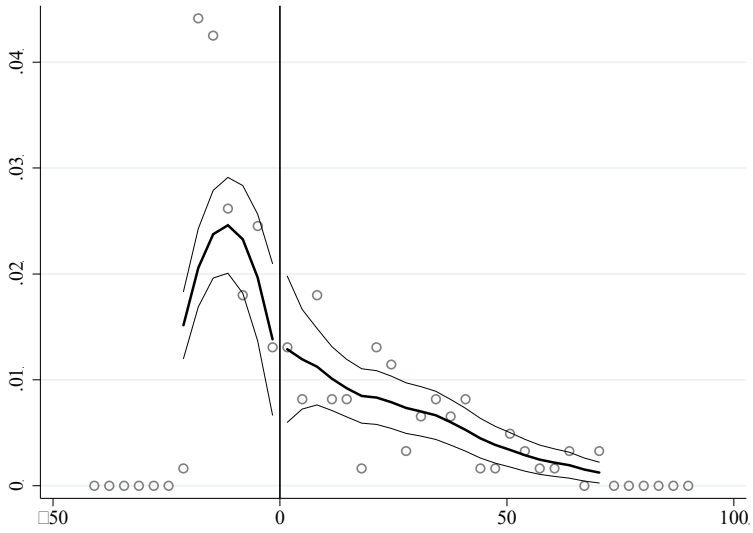


Figure 4

Average Abnormal Dollar Returns to Acquisitions in UK and US

The Figure reports average abnormal value returns for acquisitions in the US and the UK in 2011 dollars. Abnormal dollar returns are calculated by 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. The UK returns are split over Class 1 and Class 2 transactions, the US returns over relative size: the deal value divided by market capitalization of the acquirer larger and smaller than 25%. The difference in the average value between a UK deal that is subject to a mandatory vote (Class 1) and a US deal that is relatively large (≥25%) but not subject to a mandatory vote is $99 million. The difference between a UK Class 2 deal and a relatively small deal in the United States is $6 million. The difference in the differences is $93 million.

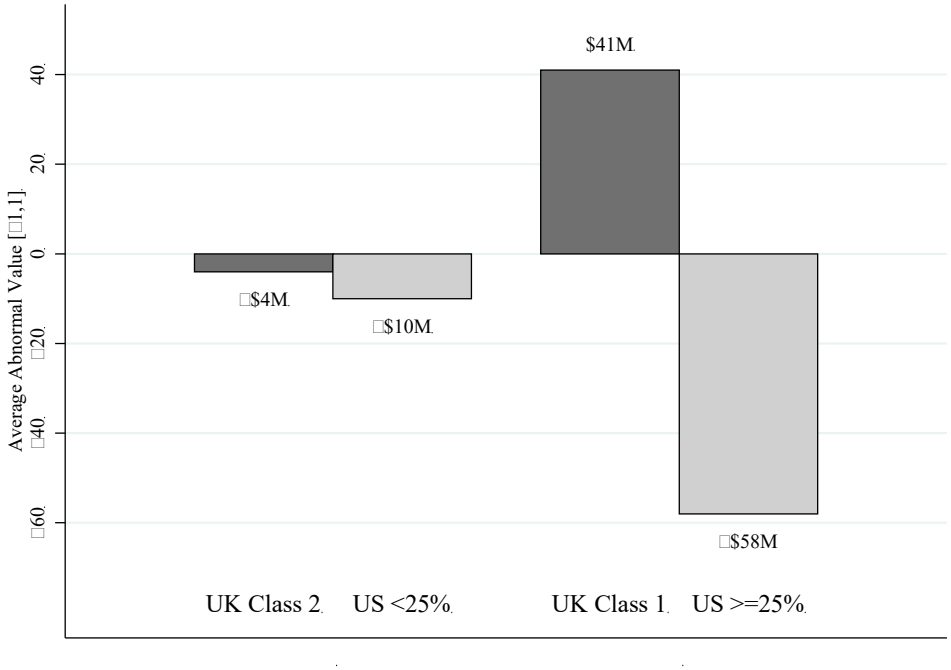


Figure 5

Prudential Plc's Failed Acquisitions of AIA

The line traces the daily cumulative abnormal returns for Prudential Plc from the announcement of the acquisition of AIA until shortly after the scheduled shareholder vote. The first vertical line marks the date the deal was announced (1); the second and the third lines mark a negative recommendation from ISS, the proxy adviser (2) and public opposition from a hedge fund (3); the 4th line is drawn on the day the Prudential formally dropped the bid (4); the solid line demarks the AGM where the vote on the acquisition had been scheduled to take place (5).

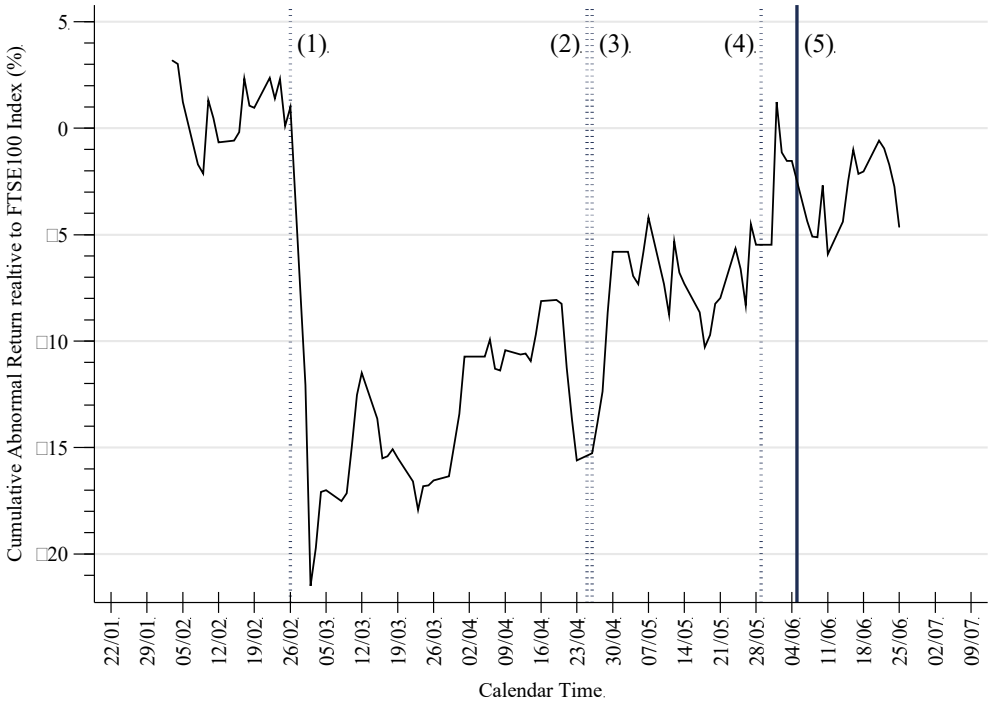


Table 1

Sample distribution of Class 1 and Class 2 Transactions

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 either completed, withdrawn or not completed for another reasons, for example the target is purchased by a third party. 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).

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	20	5.2%
Other	31	8.1%
Class 2 Transactions		
Completed deals	777	88.2%
Withdrawn deals	9	1.0%
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 1 month of announcement	221	66.6%
Vote between 1 month and 6 months	101	30.4%
Vote after 6 months	10	3.0%
Total	332	

Table 2

Differences in CARs between Class 1 and Class 2 Transactions

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%; 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 .10, .05 and .01 levels, respectively.

		Class 1 transactions (1)	Class 2 transactions (2)	Difference (1)-(2)	t/z statistic mean difference test
Panel 1 – Differences in Announcement Abnormal Returns					
CAR (-1,+1)	Mean	2.53	0.79	1.74	4.93***
	Median	1.60	0.46	1.14	4.05***
Dollar Returns ($M)	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) incl. cases with confounding inf.	Mean	2.05	0.96	1.09	2.88***
	Median	1.10	0.51	0.59	2.64***
	N	446	937		

Table 3

Summary Statistics for Control Variables

The table reports summary statistics for deal characteristics, acquirer characteristics and the four rations underlying the Class Tests. Panel 1 reports variables for deal characteristics. The dummy variables are set to 1 when the following conditions are met: *Stock* if the deal is at least partially stock financed; *All cash* if the deal is purely-cash financed; *Private* if the target is a private company; *Public* if the target is a public company (the reference group for *public* and *private* is subsidiary); *Hostile* if the deal is hostile; *Cross border* if the target is not from the UK; *Merger* is set equal to 1 if the deal is a merger; *Diversifying* if the bidder and target do not share the Fama French 12 industry; *Multiple bidders* is set to 1 if there is more than one bidder for the same target. *Industry activity* is calculated as the number of target firms with the same first three-digit SIC code acquired each year. Panel 2 reports variables for acquirer characteristics. *Firm size* is the book value of the total assets. *Tobin's Q* is calculated as the 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* is calculated as the operating income before depreciation minus interest expense minus income taxes minus capital expenditures, scaled by book value of total assets. *Leverage* ratio is calculated as the book value of long-term debt and short-term debt divided by the market value of total assets. Panel 3 reports variables for the 4 class tests. *Relative size* is calculated as the deal value divided by the market capitalization of the acquirer as reported by Datastream in the year end prior to deal announcement. *Relative gross assets* is calculated as total assets of the target divided by total assets of the acquirer. *Relative profits* is calculated as pre tax income of the target divided by pre tax income of the acquirer. *Relative gross capital* is calculated as (deal value plus liabilities of the target) divided by (market capitalization of the acquirer plus liabilities of the acquirer). *, ** and *** denote significance at .10, .05 and .01 levels, respectively.

Variable	All Deals		Class 1		Class 2		Diff.	t statistic mean difference test	N
	Mean (1)	Median (2)	Mean (3)	Median (4)	Mean (5)	Median (6)	(3) – (5)		
Panel 1 – Deal Characteristics									
Stock	0.22	0	0.09	0	0.02	0	0.07	5.27 ***	1109
All cash	0.46	0	0.35	0	0.50	1	-0.16	-4.79 ***	1109
Private	0.55	0	0.42	0	0.61	1	-0.19	-5.87 ***	1109
Public	0.12	0	0.27	0	0.06	0	0.21	10.30 ***	1109
Hostile	0.01	0	0.02	0	0.00	0	0.02	3.44 ***	1109
Industry activity	26.13	10.00	20.35	8.00	28.60	11.00	-8.25	-2.49 **	1109
Cross border	0.36	0	0.33	0	0.37	0	-0.04	-1.39	1109
Merger	0.39	0	0.58	1	0.32	0	0.26	8.27 ***	1109
Diversifying	0.35	0	0.35	0	0.35	0	-0.00	-0.16	1109
Multiple bidders	0.01	0	0.04	0	0.00	0	0.04	4.63 ***	1109
Panel 2 – Acquirer Characteristics									
Firm size ($mill.)	1143.34	166.88	1373.98	159.62	1033.18	168.95	340.79	1.15	990
Tobin's Q	1.79	1.46	1.95	1.55	1.72	1.44	0.23	2.75 ***	969
Free Cash Flow	-0.01	0.00	-0.02	0.00	-0.01	0.00	0.00	-0.68	959
Leverage ratio	0.14	0.13	0.15	0.12	0.14	0.13	0.00	0.36	965
Panel 3 – Class Test Variables									
Relative Size	22.98	12.45	46.49	33.17	11.59	9.16	34.90	15.58 ***	971
Rel. Gross Assets	61.61	12.48	69.12	24.90	54.41	5.66	14.71	0.30	276
Relative Profits	-196.70	10.26	-414.35	27.79	-37.54	6.00	-376.81	-1.11	419
Rel. Gr. Capital	58.44	19.59	68.38	40.66	48.58	10.45	19.80	0.57	265

Table 4

Multivariate Analysis of Acquirer Returns

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 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 were 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: 1) deals where the size of the acquirer is in the bottom quartile of the distribution, 2) deals where the size of the acquirer is in the top quartile of the distribution, 3) deals where the target is a private company, 4) deals where the mean of payment is only cash. T-statistics are in parenthesis. *, ** and *** denote significance at .10, .05 and .01 levels, respectively.

	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)

Table 4 continued

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

Table 5

Class 1 and Class 2 Transactions: Propensity Score Matching

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 two different matching techniques: Kernel matching method and Nearest Neighbor 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 *pscore* module (Becker and Ichino 2002).

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***

Table 6

Class 1 and Class 2 Transactions in Narrow Bands

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 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 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 parenthesis. *,** and *** denote significance at .10, .05 and .01 levels, respectively.

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 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 ($M)	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

Table 7

Class 1 and Class 2 Transactions: Regression Discontinuity Design

Panel 1 reports estimates of the jump in the CARs in the three days around the announcement, 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 cut off kernel regressions are estimated. Estimates are based on the use of the optimal bandwidth calculated following Imbens and Kalyanaraman (2012). Model 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, Diversifying*) as a dependent variable. The subsample is restricted to transactions with M between -15% and 15% (117 cases). The estimation was performed using the Stata *rd* module (Austin 2011).

Panel 1 – MRDD Estimates

	Fuzzy MRDD			Placebo Test	
	M=0	M=0	M=0	M=-5	M=5
	(1)	(2)	(3)	(4)	(5)
Jump in outcome (CAR)	3.96**	3.22	3.10*	-2.89	0.83
	(2.00)	(1.54)	(1.73)	-(1.43)	(0.36)
Jump in the probability of treatment (Class 1)	0.50*	0.51***	0.51**	0.19	-0.46
	(1.92)	(2.90)	(2.18)	(0.378)	-(1.53)
Ratio (Local Wald Estimator)	7.90*	6.34*	6.01*	-15.48	-1.80
	(1.95)	(1.81)	(1.83)	-(0.69)	-(0.38)

Panel 2 – Balance Tests on Covariates at M=0

	Coefficient	t-stat
Industry activity	-5.74	-0.46
Stock	-0.21	-0.48
All cash	0.39	1.31
Private	-0.20	-0.46
Public	0.27	0.63
Merger	-0.14	-0.85
Diversifying	0.03	0.07
Cross border	0.37	1.02
Firm Size	1.92	1.41
Tobin's Q	-1.31	-1.15
Free Cash Flow	-0.08	-1.01
Leverage ratio	0.05	0.12

Table 8

Comparison with the United States

The sample consists of 8,299 completed mergers and acquisitions (listed in SDC) made by acquirers listed on U.S. stock exchanges between 1992 and 2010. Panel 1 reports the results of 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 S&P index from the raw return of the firm's equity. The three models control for Deal characteristics, Acquirer characteristics. All three models include year and industry fixed effects. In model 1 we use as an independent variable the dummy variable *Transactions with RS > 25%*. RS is relative size and is calculated as the deal value divided by the market capitalization of the acquirer. In model 2 we restrict the sample to transactions with relative size between 15% and 35%. In model 3 we use the full sample but the independent variable is the dummy variable *Transactions with RS > 100%*. T-statistics are in parenthesis. *, ** and *** denote significance at .10, .05 and .01 levels, respectively. Panel 2 reports abnormal dollar returns. Abnormal dollar returns are calculated multiplying the market capitalization of the acquiring firm the day before the announcement by the cumulative abnormal returns obtained in the three days around announcement. We report the values in 2011 dollars. We split the sample in transaction with Relative size larger and smaller than 25%. In Panel C we compare the UK abnormal dollar returns for matching samples of US transactions in the subsamples of transactions between 5% and 25% and larger than 25%. We report the Average Treatment Effects for the Treated where the treatment is being a UK transaction. We use two different matching techniques: Kernel matching method and Nearest Neighbor matching method. The standard errors are bootstrapped (1000 replications).

Panel 1 – Abnormal Returns in the United States

	Dependent variables CAR		
	All sample	Narrow bands	All sample
	(1)	(2)	(3)
Transactions with RS > 25%	1.69***	-0.06	
	(5.89)	(-0.06)	
Transactions with RS > 100%			2.80***
			(3.57)
Deal controls	Yes	Yes	Yes
Acquirer controls	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N	8288	2306	8288
R^2	0.05	0.05	0.05

Panel 2 – Abnormal Dollar Returns in the United States

		Larger than 25% (1)	Smaller than 25% (2)	Difference (1)-(2)	t/z statistic for the tests of difference
Full sample					
Dollar Returns ($M)	Mean	-58.25	-10.29	-47.96	-2.93***
	Median	1.69	2.27	-0.58	-1.56*
	Sum of Values	*-$214,114*	*-$65,438*		
	N	3676	6361		
Narrow bands					
Dollar Returns ($M)	Mean	-44.12	-23.31	-20.81	-0.60
	Median	1.48	2.14	-0.66	-0.22
	Sum of Values	*-42,932*	*-41,996*		
	N	973	1780		

Table 8 continued

Panel 3 – Comparison of Abnormal Dollar Returns in the U.S. and the U.K. ($M)

Method	N of treated (U.K.)	N of control (U.S.)	ATT	t-statistic mean difference test
UK Class 1 and US with RS ≥ 25%				
Kernel	245	4456	$90.54	1.54*
Nearest Neighbor	245	829	$124.97	1.51*
UK Class 2 and US with RS < 25%				
Kernel	628	7138	$1.24	0.19
Nearest Neighbor	628	1630	$1.23	0.15

Table 9

Announcement Returns and Relative Size of Withdrawn Deals

Panel 1 reports cumulative abnormal returns (CARs) in the three days around the announcement of acquisitions that are publicly announced and subsequently withdrawn. Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. Panel 2 reports the relative size of the withdrawn deals. We split the sample between Class 1 and Class 2 transactions. The different number of deals in the two panels depends on the availability of data.

Panel 1 – Cumulative Abnormal Returns (-1,1) %		
	Class 1	Class 2
Mean	-1.70	-0.76
Median	-1.00	0.36
25th percentile	-6.10	-1.20
5th percentile	-11.90	-3.90
N	20	9
Panel 2 – Relative Size in %		
Mean	174	24
Median	67	13
N	19	8

Table 10

Takeover Premia

This table reports takeover premia for target shareholders in the 1-day and 1-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 .10, .05 and .01 levels, respectively.

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

Table 11

Acquirer Returns with Multiple and Single Bidders

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.

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

Appendix I

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 UK 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	Pre tax income of the target divided by pre tax 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