Does Mandatory Shareholder Voting Prevent Bad Acquisitions?

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December 30, 2014

Can shareholder voting prevent managers from destroying value in corporate acquisitions? Previous studies based on U.S. data are inconclusive because shareholder approval is discretionary. We study the U.K. where approval is mandatory for deals exceeding a multivariate relative-size threshold. We find that in the 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. U.S. shareholders lost $214 billion in matched deals. Differences-in-differences and multidimensional regression discontinuity analyses support a causal interpretation. Our evidence suggests that mandatory voting imposes a binding constraint on acquirer CEOs.

JEL classification: G34, K22

Keywords: Corporate acquisitions, corporate governance, shareholder voting, securities law

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"If I had a chance to vote on this, I'd vote no. [Irene Rosenfeld] thinks it's a good deal; I think it's a bad deal."

Warren Buffett, in an interview to CNBC (20 January 2010) with reference to the proposed acquisition of Cadbury Plc by Kraft Inc. Warren Buffett, as Chairman of Berkshire Hathaway, was Kraft's single largest shareholder with a 9.4% stake. Irene Rosenfeld was the CEO of Kraft.

1 Introduction

One of the most striking failures of corporate governance is the systematic destruction of shareholder value caused by unsuccessful acquisitions. Extensive empirical evidence documents that a large percentage of mergers and acquisitions destroy value 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 (2005)). Why do boards and management ignore this evidence and continue to make large and risky acquisitions?

There are two leading explanations for this phenomenon. 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 (Morck, Shleifer, and Vishny (1990), Savor and Lu (2009), Kropf and Viswanathan (2004), Dong et al. (2006)). The market for corporate control (Masulis, Wang, and Xie (2007)) and the media (Liu (2012)) 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 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. In equilibrium all acquisition proposals will be approved.

Previous research has investigated voting on acquisitions in the U.S. context by comparing the announcement returns on acquisitions that were subject to a shareholder vote with those that were not (Kamar (2006), Hsieh and Wang (2008)). However, this evidence is inconclusive because shareholder voting on acquisitions in the U.S. is endogenous since CEOs of U.S. corporations can choose which deals are voted on. In fact, while in principle under the NYSE rules mandatory voting is confined to equity financed deals when new share issuance is 20% or more of the acquirer's outstanding equity, in practice managers can avoid this voting requirement by funding the deal with a combination of less than 20% of new equity, debt or cash. Hsieh and Wang (2008) confirm that acquisition funding that is structured to bypass shareholder approval is more likely to be associated with value-reducing deals. Hence it is more likely that positive deal value causes shareholder voting than the reverse, rendering the U.S. evidence inconclusive.

We overcome this empirical challenge by focusing on the U.K. setting where shareholder voting on significant acquisitions is mandatory and imposed exogenously via a series of threshold tests. In addition, for deals close to the threshold the assignment is 'as good as random'. These features of the U.K. system provide us with a robust identification opportunity. In addition, the absence of mandatory voting in the United States provides us with the opportunity to compute the difference in differences between relatively large deals and smaller deals 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. Acquirers are subject to four "class tests". Each test employs a different measure of relative size: the ratio of gross assets, profits, the consideration offered and the market cap of the acquirer and the ratio of gross capital. Deals that pass any one of the four threshold tests are called Class 1 transactions and require a mandatory shareholder vote. In contrast, the smaller Class 2 transactions do not require a shareholder vote. The Class 1 test dates back to at least the 1970s (Alcock (2007)), and lack of data from such early period prevents us from using the introduction of the test for identification purposes.

Even under the U.K. rules our identification strategy only works if CEOs and boards are unable to manipulate the tests by "gaming" the threshold to avoid the vote. It is implausible that a CEO can manipulate four tests and the "plausibility test" of the regulator, but to be sure we look at the density distribution of the four assignment variables. With manipulation deals should cluster just below the relative size threshold. We find no such evidence. A formal McCrary (2008) density test also rejects the manipulation null hypothesis. Hence we conclude that the U.K. threshold rules generate exogenous variation in voting status across deals.

We examine the impact of the voting assignment on the performance of acquisitions by comparing Class 1 and Class 2 transactions of U.K. acquirers and by comparing Class 1 U.K. transactions with U.S. transactions that are matched by relative size and other deal characteristics.

We find that shareholders in the U.K. never vote against Class 1 transactions ex-post and 66% of all Class 1 transactions go to a successful vote very quickly, in less than a month.

In terms of deal performance there is a significant difference between Class 1 and and Class 2 transactions. 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, in Class 2 U.K. transactions that do not require a vote shareholders lost $3 billion in the aggregate. These differences are statistically significant at all levels of confidence.

We perform a number of robustness tests. First, 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. Second, we examine subsamples of acquirers in the top and in the bottom size quartile, private targets, and all-cash deals. Third, we match Class 1 to Class 2 deals using propensity scores. In each case we confirm the superior performance of the Class 1 deals.

It is still possible to argue that Class 1 deals are fundamentally different from Class 2 deals because, by definition, they are relatively larger. The Class 1 effect might simply capture the positive impact of relative-size and not the impact of mandatory shareholder voting. However, we find that relative-size does not explain the difference

in performance: first, we specifically control for relative size in a multivariate regression, to no effect; and second, we compare deals around the class test thresholds. These deals have similar relative size and only differ in Class status. Deals subject to mandatory shareholder approval continue to exhibit superior performance.

The threshold analysis also responds to a more subtle concern. Class 1 status, relative size and performance might correlate with some unobservable characteristics, for example growth opportunities. As a result superior Class 1 performance could be explained by the unobservable characteristics and not by the impact of shareholder voting. However, close to the threshold deals are similar in relative size and hence should be similar in the unobservable characteristics as well.

More formally we perform the threshold analysis in two steps. First, we perform a "narrow bands" analysis ("naïve RDD") and restrict the sample to 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%. Second, we perform a multivariate test based on a Multidimensional Regression Discontinuity Design (MRDD). The MRDD combines the four variables underlying the class tests into a single metric. This metric is then related to announcement returns. At the threshold the assignment variable should be smooth, but the outcome variable should change discontinuously ("jump") because mandatory voting deters overpayment. As a result, Class 1 transactions just above the assignment threshold should have higher announcement returns than Class 2 transactions just below. This is indeed what we find, supporting a causal interpretation of the effect of shareholder voting on M&A performance.[1]

Finally we examine U.S. acquisitions that are similar to the Class 1 U.K. deals, in terms of relative size and other observable characteristics. In particular, we compare Class 1 U.K. deals with U.S. deals above the same relative size threshold; and Class 2

[1] In standard RDD subjects are assigned to treatment groups and they are unable to leave the sample after learning to which group they belong. Our setting is non-standard, because after assignment some deals might be withdrawn after CEOs learn that they are subject to a shareholder vote. These deals were assigned to a treatment group like in standard RDD but they are never announced and, hence, they are unobservable. As a result the density of our assignment (forcing) variable could exhibit a discontinuity that is not due to ex-ante manipulation of the threshold but ex-post selection. However, in the data we do not observe such a discontinuity. This suggests that ex-post selection is not a relevant phenomenon in this context or happens far away from the threshold. We discuss this issue in further detail in the MRDD section below.

U.K. deals with similar U.S. deals below the relative size threshold. This differences-in-differences strategy controls for all time-invariant economic and institutional differences between U.K. and U.S. and allows focusing on the impact of mandatory shareholder voting, which only affects U.K. deals above a relative size threshold. We find that in these larger deals U.S. shareholders lost $210 billion in aggregate. Therefore, our findings indicate that Class 1 transactions in the U.K. systematically increase shareholder value and are always approved ex-post, while acquisitions of similar size in the U.S. lead to large aggregate losses for acquiring shareholders. Smaller relative size deals that are not subject to mandatory shareholder approval have similar returns in the U.K. and the U.S.

In sum, all our results indicate that mandatory shareholder voting is associated with higher acquirer shareholder returns. Our tests based on differences-in-differences and MRDD also support a causal interpretation of the findings.

In the final part of the paper we examine the channels through which mandatory voting causes 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 main possibilities: either mandatory voting deters acquirer CEOs from overpaying; or, it strengthens the acquirer CEOs bargaining position vis-à-vis the target CEOs.

To investigate which effect is at work we look at premia offered to target shareholders and the likelihood that deals poorly received by the market are withdrawn.

We find that target shareholders earn very similar takeover premia with and without shareholder voting. This finding suggests that mandatory voting does not affect the relative bargaining power of acquirer and target CEOs. On the other hand we find that, among the deals with worst announcement returns, Class 1 deals are the most likely to be withdrawn; and among withdrawn deals, Class 1 are the worst performing ones. These findings suggest that mandatory voting exerts a *deterrence effect* on the tendency of acquirer CEOs to 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 previous literature has often associated with an increased likelihood of overpayment (Hietala, Kaplan, and Robinson (2002)).

We conclude that mandatory shareholder voting is a governance mechanism that can effectively prevent poor acquisitions. The prospect of a shareholder vote restrains CEOs and boards from overpaying, which implies that deals are completed at lower prices than would have occurred absent the threat of mandatory voting, and that some deals are even withdrawn as a result of this threat.

Our paper is related to a recent and growing body of literature that applies robust empirical methods to corporate governance and finance.[2] 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 ordinary meeting proposals and examines the ex-post outcome of actual votes while we consider the ex-ante impact of mandatory voting when the outcome might have large negative consequences for shareholder wealth.[3] Our paper is also related to studies of non-voting constraints on acquirer behaviour 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, 2009), in particular after a negative media reaction (Liu and McConnell 2013).

The paper is organized as follows. Section 2 provides the legal and institutional framework. Section 3 describes the data. Section 4 reports the empirical results. Section 5 concludes.

2 Law and institutions

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

[3] There is also a connection with studies on shareholder activism by institutional shareholders (Gillan and Starks 2003, Karpoff 2001, Brav, Jiang, Partnoy, and Thomas 2008, Becht, Franks, Mayer and Rossi 2009). In a recent paper, Iliev, Lins, Miller, and Roth (2014) focus on the ex-post voting behaviour of U.S. institutions internationally, and find that a higher percent of dissenting votes of U.S. institutions correlates with higher director turnover and lower M&A completion rates, particularly in countries with low shareholder protection. Becht, Franks, Grant, and Wagner (2014) find that shareholder activism may even contribute to bad acquisitions because it puts targets in play, which is profitable for the activists invested in the takeover targets, but not necessarily for the acquirer shareholders.

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

Warren Buffett had little influence on the outcome of the deal. The corporate law of Virginia does not give shareholders the automatic right to vote on a corporate acquisition. The listing rules of the New York Stock Exchange do not require a vote unless 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." Kraft changed the financing terms accordingly and thus avoided a shareholder vote (Davidoff (2010)). In general legal scholars and deal practitioners have argued that US acquirers can avoid a shareholder vote without great difficulty. They can use at least 80% cash financing and strategically choose their place of incorporation to acquire a target of any size. "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 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.

2.1 U.K. Listing Rules

Chapter 10.1 of the U.K. listing rules requires that shareholders of listed companies entering into certain transactions be duly notified and "have the opportunity to vote on larger proposed transactions" (LR10.1.2(2)). These larger transactions requiring mandatory shareholder approval are known as "Class 1 transactions".

What constitutes a Class 1 transaction is defined in four "Class tests" (for details see Appendix) where each defines a ratio that measures the size of the target relative to the acquirer:

1. *The gross assets test*: the ratio of the gross assets of the target and the acquirer;

2. *The profits test*: the ratio of the profits of the target after deducting all charges except taxation and the profits of the acquirer;
3. *The consideration test*: the ratio of the consideration for the transaction offered to the target and the market value of all the ordinary shares of the acquirer.
4. *The gross capital test*: the ratio of the gross capital of the target and the acquirer[4].

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.

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

[4] The gross capital of the target is the consideration plus any shares or debt securities which are not acquired. The gross capital of the acquirer is the market value of the shares plus the amount of debt issued.

shareholders in a shareholder meeting and must ensure that any agreement with the target is conditional upon shareholder approval (LR 10.5).

These well-established listing rules ensure that all acquisitions by a U.K. company listed on the Main Market larger than the above-defined multidimensional size threshold must have shareholder approval.[5]

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 (see **Figure 1**). In a "stylised transaction" the chief executive of the potential acquirer will contact a banker, who, if the acquisition goes ahead, will typically act as sponsor.[6] The banker will look at the business plan and decide whether he is interested in funding the project, 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 were likely to be Class 1 the banker would 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. 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 - which accounting year, the date of the market capitalization valuation and how exactly the ratios have been calculated. Throughout this period the offer price can be revised or the offer can be abandoned.

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

[5] The listing rules also contain some more detailed requirements that have been incorporated on the basis of past experience. For example, the regulator might decide that in special circumstances the class tests are not sufficiently reliable and impose an alternative test.

[6] The role of the sponsor is regulated and supervised by the FSA. "The sponsors provide assurance to the *FSA* when required that the responsibilities of the *listed company* or *applicant* under the *listing rules* have been met." UKLA Listing rules

in the shareholder register to inform them about the transaction and seeking their informal approval.[7]

Although the disclosure requirements for Class 1 and Class 2 acquisitions are the same, the information included in the public announcement for Class 2 is much less detailed than that in Class 1 announcements.[8] The former simply informs the market and the regulator about an acquisition; the latter needs to convince shareholders about the merits of executing the transaction. The Class 1 announcement statement includes all the information which will be sent in the following days to the shareholders in the form of a Class 1 circular.

Post-announcement a Class 2 transaction is completed without involvement from the shareholders. In the case of a Class 1 transaction the investor relations department of the company is actively engaged in promoting the transaction to the general public to ensure a favourable outcome in the EGM. 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 1). The Prudential case underscores that shareholder opposition can cause the management to revise the terms of an offer, and even to abandon a "bad" deal. 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

[7] The names of the people informed about the transaction by the sponsor are put on an "insider list" which is sent to the FSA.
[8] While usually the statement of the announcement of a Class 2 transaction in RNS is about 20 lines, the equivalent document for Class 1 acquisitions is several pages long.

acquirers who belong to the financial industry.[9] We merge this database with accounting information and stock returns of the acquirers from Datastream. From this population we extract a 50% random sample with 5,400 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 and cases where the deal value of the transaction as a percentage of the acquirer's capitalization is smaller than 5%.[10] 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. In particular we record whether the transaction is subject to shareholder vote. If it is we record a) the reason for the vote;[11] 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, if necessary we manually correct the announcement date reported by SDC.[12]

For our main analysis we drop transactions: a) where the acquirer has no stock returns data on Datastream or there is no information in the Regulatory News Service about the acquisition (79 cases), b) where the shareholder approval is due to the share issuance[13] or the identity of the buyer (related party) instead of a Class 1 test (54 cases), c) where the transaction is not completed (186 cases), d) where on the same day of the announcement of the transaction there is the release of the interim results on the Regulatory News Service (274 cases). In the final sample we have 1,109 transactions.

Table 1 describes our 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. Around 5 % of the deals are dropped after the public announcement. We also split the completed deal sample by the time to the

[9] 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.
[10] 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.
[11] Possible reasons are "failing" one of the Class tests (Class 1 transaction), a transaction with a related party or issuing a significant amount of new shares.
[12] We found that the announcement dates reported by SDC were wrong in 9.8% of cases.
[13] 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.

shareholder vote: in 66% of cases the EGM date is within one month of the public announcement.

Summary statistics by announcement year are reported in Table 2. 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 US. In Table 2 we also split the number of acquisitions for each year into Class 1 and Class 2 transactions. The total number of Class 1 acquisitions is 332, amounting to 29.9% of our sample.

4 Empirical Strategy and Results

The advantage of the U.K. institutional setting in studying the effectiveness of shareholder voting on the value creation of acquisitions is the mandatory nature of the shareholder approval. In the United States managers can avoid a shareholder vote by altering the choice of payment or state law under which the deal takes place. In Section 4.1 we examine the basic premise of our empirical strategy, and in Section 4.2 we examine actual votes in EGMs. Section 4.3 contains the baseline univariate and multivariate results of comparisons of acquirer announcement returns in deals with and without mandatory shareholder voting. Section 4.4 addresses endogeneity concerns by presenting results based on propensity score matching, narrow-band comparisons across the threshold, and a formal multidimensional regression discontinuity (MRDD) test. Section 4.5 present results of a comparison of acquirer announcement returns in U.K. and U.S., and further addresses endogeneity concerns by performing a differences-in-differences test. Section 4.6 examines the potential channels through which mandatory shareholder voting may lead to higher acquirer returns.

4.1 No gaming of the threshold

The basic premise of our empirical strategy is that management cannot manipulate the threshold rule. To test for this possibility we look at the kernel density functions of the assignment variables for all the deals that are announced in the UK. Figure 2 reports these estimates for the variables underlying the four class tests: relative size, relative profits, relative total assets and relative gross assets. If CEOs were able to game the threshold we would observe a clustering to the left of the 25% vertical line. No such

clustering is visible[14]. A formal McCrary (2008) test of threshold manipulation is also rejected, as we discuss in Section 4.4 below.

4.2 Do shareholders vote against acquisition proposals?

It is natural to assume 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. 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" ones; (2) shareholder voting is an effective deterrent and in equilibrium only "good" deals will be put to a vote.

In the latter case acquisitions that are considered "bad" by the shareholders never reach the voting stage because managers know that they will be rejected. Managers do not risk an embarrassing "no" vote at the EGM because it might damage their careers.[15] They will only propose acquisitions that are sure to pass. In this view, it is not the actual vote but the prospect of the vote that imposes a binding constraint.

Deterrence works before the public announcement because managers discuss the potential shareholder reaction to a range of offer prices and the nature of the acquisition with specialist advisers. These conversations will heavily influence the terms of the offer. 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. If shareholder voting imposes a constraint we should find that Class 1 transactions outperform Class 2 transactions.

If shareholders are conflicted they might vote in favour of "bad" deals. Acquirer shareholders might outweigh the negative announcement returns in the target with concomitant positive returns on their equity stakes in the targets (Matvos and Ostrovsky (2008), Harford, Jenter, and Li (2011)). 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 favour acquirers paying "too much". If this was true we should find

[14] Very similar graphs obtain if we consider only completed deals.
[15] Fos and Tsoutsoura (2013) document the negative career impact of proxy contests for U.S. managers.

Class 1 performing like Class 2 transactions or worse.[16] In the next section we shed light on these alternative possibilities by measuring relative performance.

4.3 Baseline 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. We compute 3-day cumulative CARs during the window encompassed by event days (-1, +1), where day 0 is the acquisition announcement date.

4.3.1 Univariate comparison of announcement returns

In Table 3 we compare the announcement returns of Class 1 and Class 2 transactions. We find that the returns generated by Class 1 acquisitions are significantly larger than those in acquisitions not subject to shareholder approval. The tests for differences in means and medians confirm that the difference is statistically significant. This result holds also 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.[17]

Moreover, we follow the approach of Malatesta (1983) and Moeller, Schlingemann, and Stulz (2005) to assess the economic significance of these results. Looking at CARs we give equal weights to companies with very different market capitalizations. If we want to consider the economic impact of these transactions we need to look at the dollar amounts created or destroyed by the acquiring firms. Therefore, we multiply the market capitalization of the acquiring firm the day before the announcement by the cumulative abnormal returns obtained in the three days around the announcement. We find that while Class 2 deals on average destroy value, Class 1 deals create value. The average dollar abnormal returns (in 2011 dollars) is -3.87 million dollars for Class 2 and +41.19

[16] The shareholders of highly leveraged banks might also vote in favour of a "bad" acquisition because it increases their option value, at the expense of bondholders (Becht, Bolton, and Röell (2011)). Banks and other financial institutions are excluded from our sample. Passive shareholders will not vote or outsource their vote to proxy advisers. As the Prudential Plc case shows, proxy advisers are willing to recommend against "bad" acquisition proposals (Appendix 1).

[17] The 30 acquisitions subject to shareholder approval not because of the Class 1 tests but because of the issue of a substantial amount of new shares are associated with a mean CAR of 1.5 and a median CAR of 1.6.

million dollars for Class 1. The aggregate value creation by Class 1 deals is 13.6 billion dollars, and the aggregate value destruction by Class 2 deals is 3 billion dollars.

4.3.2 Multivariate comparison

The higher returns for Class 1 observed in the univariate setting could reflect the correlation of acquirer returns with other determinants of acquirer returns. In this section we control for such potential influences of observable covariates in a multivariable regression framework. We begin by considering observable acquirer, target, and deal characteristics, such as the target listing status or the method of payment, which previous research has shown to have explanatory power in the analysis of acquirer returns. We consider the methods 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, whether the deal has one or multiple bidders. As for the acquirer characteristics we consider the size of the bidder, the leverage ratio, the free cash flow and the Tobin's Q. Definitions of the variables are reported in the appendix. Descriptive statistics are summarized in Table 4.

In Table 5 we report the comparison between Class 1 and Class 2 transactions in the above variables. 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 they differ in their level of Tobin Q, as companies making Class 1 transactions have a significantly higher level of Tobin Q. This evidence suggests a screening effect of the Class 1 rule. Relatively better performing managers make more Class 1 transactions, confident in the support of their shareholders. The deal characteristics of the two groups of transactions are quite different: Class 1 transactions are associated with more hostile deals, more stock-financed deals, more U.K. targets, more public and less private targets, more mergers, more deals in industries with less takeover activity and more deals with multiple bidders.

Table 6 reports the results of multivariate OLS regressions of cumulative abnormal returns (CAR) in a three day event window (-1,+1) on the above acquirer and deal characteristics, with standard errors clustered by acquirers. In model 1 the only

explanatory variable is the Class 1 dummy. In model 2 we control for deal characteristics and in model 3 we control also for acquirer characteristics. Not only controlling for the differences documented in Table 5 does not remove the significant effect associated with the Class 1 dummy that we find in the univariate analysis of Table 3, but the magnitude of the coefficient of the Class 1 dummy increases significantly. Ceteris paribus, if a transaction is subject to shareholder approval the returns to the acquirer are almost 2.5% larger than those of Class 2 transactions.

With respect to the control variables, we find that acquiring a public target and going hostile produce significantly lower returns. The other controls have signs which are consistent with previous studies (e.g. Moeller, Schlingemann, and Stulz (2005)) but most of them are not statistically significant. For instance, being large, paying with stock and have competing bids are associated with lower returns.

In Panel B of Table 6 we show that the main result that Class 1 deals outperform Class 2 deals holds in four distinct 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 cash is the only means of payment.

Also in the multivariate framework, results are statistically and economically very similar 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) event window.

4.4 Addressing Endogeneity

We have found that Class 1 transactions are associated with larger acquirer returns than Class 2 and this result is very robust to a number of tests including additional control variables and analysis of alternative subsamples. In this section we address endogeneity concerns, namely the possibility that our results are driven by omitted variables or reverse causality. To begin, we note that Class 1 transactions are, by definition, larger in relative size. Shareholder voting is mandatory for Class 1 deals and this status is

exogenous, but are we really capturing the deterrence effect of mandatory shareholder voting and not just relative size?[18]

In other words, it could be that our previous results incorrectly attribute higher deal values with Class 1 status because larger relative size correlates with some firm or deal characteristics we failed to control for and that affect performance. To rule out this potential endogeneity we adopt two identification strategies.

First, in Section 4.4.1 we address the possibility that Class 1 and Class 2 transactions differ in terms of some observable variables and we perform several versions of a non-parametric Propensity Score Matching approach. Second, in Section 4.4.2 we address the possibility that Class 1 and Class 2 transactions differ in terms of some unobservable characteristics, and we use the U.K. threshold rules to generate exogenous variation in shareholder voting by applying a multivariate Regression Discontinuity Design.

4.4.1 Propensity Score Matching

In this section we address the possibility that our results are driven by observable variables that affect both Class 1 status and deal net-value, 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, whereby "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 6, the Propensity Score Matching method allows us to relax the assumption of linearity in the relationship between shareholder voting and M&A performance. We estimate the propensity score as the probability of being a Class 1 transaction conditional on the covariates through a logit regression. The

[18] A first objection to this criticism is that in the literature the relative size of a transaction is not clearly associated with higher returns. Relative size is positive in Asquith, Bruner, and Mullins Jr (1983) but negative in Travlos (1987). In Moeller, Schlingemann, and Stulz (2005) it is positive for the subsample of small acquirers and it is negative for the subsample of large acquirers. It is insignificant in Masulis, Wang, and Xie (2007). Moreover, in our regressions the variable Class 1 is highly significant even when we control for the variable relative size which in our sample has a negative sign but it is statistically non significant.

list of covariates that we include are: 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 consider only one measure of the 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, we are able to satisfy the overlap condition.

We then estimate the average treatment effects for the treated (Class 1) transactions given the propensity score using different matching techniques (Kernel and Neighbor matching). The results in Table 7 strongly confirm our earlier results: transactions that are subject to shareholder approval are associated with significantly higher returns for acquirer shareholders.

4.4.2 Threshold Comparisons and Fuzzy MRDD

In this section we address the possibility that our results are driven by differences in unobservable characteristics, such as for example growth opportunities. If deals with higher relative size are also associated with better growth opportunities, then by comparing Class 1 and Class 2 transactions we may be picking up the effect of growth opportunities rather than the effect of shareholder voting.

We address this possibility in two ways. First, we compare deals close to the relative size threshold, computed as deal value divided by market capitalization of the acquirer; second, we compare deals that are close to the threshold, by considering all four class tests.

In Table 8 we restrict the sample to a subset of large Class 2 transactions (with a relative size bigger than 15%) and small Class 1 transactions (with a relative size smaller than 35%). These transactions are thus similar in terms of relative size, but differ in terms of being subject to shareholder voting as they lie on different sides of the threshold. Both in the univariate and multivariate analysis we find that the Class 1 transactions produce significantly higher returns. In fact, the economic significance of the variable Class 1 increases in this small-band analysis.

These results indicate that our results are not driven by observations far away from the 25% threshold. Furthermore, we perform a number of exercises to make sure that

different ways to compute the relative size variable do not drive our results. So far, the variable relative size is calculated as the deal value divided by the market capitalization of the acquirer at the year end before the acquisition. Our results, both in the univariate and multivariate analysis, 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 2 transactions are associated with value destruction and Class 1 with value creation. The average dollar abnormal returns (in 2011 dollars) is -9.71 million dollars for Class 2 and +33.47 million dollars for Class 1.

Next, we push the logic of the narrow bands analysis further and perform a fuzzy Multidimensional Regression Discontinuity Design (MRDD).

In the narrow bands analysis we restricted the sample to observations around the threshold of the class test of relative size and excluded small Class 2 and large Class 1 observations. Ideally, we would like to confine this comparison to a very narrow band, say (25%–ε, 25%+ε), and compute the limit for $\varepsilon \rightarrow 0$. This is the identification strategy behind the Regression Discontinuity Design (RDD) approach (Roberts and Whited (2012)).

In our case, we have four assignment variables instead of one. Hence, we need to extend the usual RDD approach and perform a Multidimensional RDD design. In fact, as mentioned in Section 2, the multi-dimensional threshold rule impacts the likelihood of shareholder voting around a threshold of 25% for each of the four assignment variables. These four variables are the ratio of total assets, the ratio of profits, the consideration offered as a proportion of the market capitalization of the acquirer, and the ratio of 'gross capital'. If any of these four ratios exceeds 25%, the transaction is classified as Class 1 and subject to shareholder approval. To summarize, a proposed transaction is assigned to be "Class 1", i.e. needs by regulation to be subject to shareholder voting, if 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 = 1 indicates a "Class 1" transaction; x_1, x_2, x_3, x_4 are the relevant variables for assignment to the "Class 1" bin corresponding to the 4 class tests, namely 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 test. Missing data in particular for x_2, x_3, x_4 implies that the sample size shrinks substantially to 249 transactions.

The MRDD implementation 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 assignment variable, M. M is defined as the maximum of the four assignment variables corresponding to the Class tests (where each variable is first centred around its threshold of 25%):

$$\text{M=max}(R_1, R_2, R_3, R_4)$$

where $R_i = x_i - x_i'$ for i=1,2,3,4. M is a continuous, observable variable, and it determines assignment to the Class 1 status according to the following:

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

Given M, we can therefore use single assignment variables regression discontinuity methods to estimate the effect of the treatment for those values of M≈0 (those in which the assignment variable of highest value is closer to the 25% threshold).

However, M does not perfectly determine the treatment assignment: 11% of the transactions are misclassified.[19] This could be due to errors in measuring the assignment variables, or to cases where, as the listing rules say, the FSA uses different ratios in cases of anomalous results in the 4 class tests to establish whether the transaction requires shareholder approval. For this reason, we need to apply a fuzzy version of the RDD which exploits a discontinuity in the probability of treatment at the cutoff M=0. In this research design, the discontinuity becomes an instrumental variable for treatment status instead of determining treatment in a deterministic manner (e.g. Angrist and Pischke (2008)). In the nonparametric version of a fuzzy RDD, the Local Average

[19] We have 17 transactions where M≥0 but the transaction is a Class 2 and 12 transactions where M<0 but the transaction is a Class 1.

Treatment Effect is then obtained by constructing a Wald estimator, namely, the ratio between the jump in the performance and the jump in the probability of treatment at the cutoff M=0. For this purpose, we restrict the sample to observations such that $-15 \leq M \leq 15$. The subsample now consists of 117 transactions.

Figure 3 and Table 9 show that around M=0 there is a large jump in the probability that a given deal is assigned to Class 1 status. This result holds, both for parametric (quadratic) and non-parametric regressions on the two sides of the thresholds. Furthermore, Panel A also shows that there is indeed a positive and statistically significant jump in outcome around M=0, so that Class 1 deals have higher CARs than Class 2 deals. The Wald estimator is positive and statistically significant in all specifications, and this result holds for various choices of the bandwidth.

We run a large battery of tests to check the robustness of our results. In Panel B of Table 9 we report placebo tests using use different "fake" thresholds and we show that around M=-5 and M=5 there is neither a discontinuity in the probability of Class 1 treatment nor in the outcome. In Panel C of Table 9, we show that the observable covariates (Firm Size, Industry activity, Cross border, TobinQ, FreeCF, Leverage ratio, All stock, All cash, Private, Public, Merger, Diversifying) do not change discontinuously around M=0.

Finally, we test for the possibility that managers and boards might attempt to 'game' the threshold, namely, manipulate the four assignment variables such that 'bad deals' show up as Class 2 so as to avoid shareholder voting. We perform a formal test for the possibility of manipulation of the class tests by the management. If there was manipulation, we would observe a discontinuity in the density function of transactions, that is, a bunching of a disproportionate number of Class 2 transactions just below the threshold. This is not the case in our data. We find that the density function of transactions is smooth around the threshold M=0. Furthermore, the McCrary Density Test (McCrary (2008)) strongly rejects the null hypothesis of the existence of discontinuity in the density function (t-stat=0.26, p-value=0.64).[20]

[20] These findings suggest that the 29 cases of misclassification described in the previous footnote are likely due to differences in the timing of measurement of the threshold variables, as we observe the last balance sheet and income statements at year end prior to the deal, while the FSA observes the threshold variables at the moment of the announcement.

In standard RDD subjects are not able to leave the sample after learning whether they have been treated or not. Our setting is non-standard, in that, subjects can still choose to disappear from the sample after the assignment, namely, CEOs and boards may decide to withdraw a Class 1 offer after they learn that it may face shareholder (dis)approval. This might cause a discontinuity in the assignment variable that is not driven by ex-ante manipulation of the threshold, but ex-post selection in the Class 1 group. In our sample we do not observe such a discontinuous jump of the density function at the threshold, which is confirmed by a McCrary test. This suggests that ex-post selection is not a significant phenomenon, at least around the threshold.

CEOs may also withdraw a deal after the announcement, for instance, after a large negative market reaction. Since the announcements are public we can fully observe these cases. We find that only a small number of Class 1 deals are withdrawn after this point (fewer than 2% of all deals) and these deals happen in a region far from the threshold (the median relative size of these withdrawn Class 1 deals is 67%). Around the threshold, our results are driven by the fact that under shareholder voting the same deals are completed at lower prices than would happen absent shareholder voting.

To conclude, our results so far confirm that, even applying a fuzzy MRDD design that generates exogenous variation in shareholder voting, Class 1 deals outperform Class 2 deals, and this occurs particularly in a neighbourhood of the assignment threshold.

4.5 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 the ownership structure of listed companies is similar to that observed in the U.K. in terms of the relative prevalence of widely-held corporations, but shareholder voting in acquisitions is not mandatory. We want to investigate the performance of deals with a relative size (defined as deal value divided by the market capitalization of the acquirer) larger than 25%, and the difference in performance between these acquisitions and those smaller than 25%.[21]

[21] 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.

There are obviously many institutional differences between the two countries (e.g., in terms of disclosure thresholds, break-up fees, rate of public auction, and so on), so that a simple comparison between the returns to acquisitions in the U.K. and in the U.S. would be naive and not immediately instructive. Instead, in this section we perform a differences-in-differences analysis. 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 essentially 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 apply the same filters we apply for 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 left with a sample of 10,824 transactions.

4.5.1 Differences-in-differences of announcement abnormal returns

We first look at CARs in the three days window around the announcement of the acquisition (Panel A of Table 10). In the same spirit of Table 6 we regress the CARs on a dummy variable which is equal to 1 if the transaction has a 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 U.S., where there is no law imposing the requirement of shareholder approval after 25%, transactions larger than 25% are in fact value increasing. It could be that when a proposed acquisition passes this threshold it attracts more media attention or pressure from 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 dummy variable equal to 1 for transactions larger than 25% is now not significant anymore and it also changes sign. In column 3, we go back to the full sample but we change the definition of the dummy variable, which now gets the value of 1 if the transaction is larger than a 100% threshold (i.e. a reverse takeover).

In this case the coefficient on the dummy variable is highly significant and is now almost double 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 threshold 25% is not associated to any specific change of pattern in terms of quality of deals and only deals with a very large relative size, larger than 100%, attract larger abnormal returns.

4.5.2 Differences-in-differences of announcement abnormal dollar values

Next, we turn the attention to the abnormal dollar returns in the three days window around the announcement. Moeller, Schlingemann, and Stulz (2005) 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 dollars (in 2001 dollars). In Figure 4 we report the evolution of the average abnormal returns by year and by country. We confirm the findings of Moeller, Schlingemann, and Stulz (2005) for the U.S. acquisitions until 2001, and we find that wealth destruction in the U.S. continues until the end of our sample, with negative peaks in 2008 and 2009.

By contrast, the U.K. acquisitions appear to be characterized by much larger positive abnormal dollar returns. In Figure 5 we compare the average wealth creation/destruction for transactions of relative size below and after 25%. We find that, also for the time period 1992-2011, acquisitions in the U.S. are, on average, associated with destruction of value but, more remarkably, the average destruction of wealth for transactions larger than 25% is almost six times larger than the one associated with smaller transactions (-$58 vs. -$10 millions in 2011 dollars). The same pattern is also present if we look at narrow bands: transactions between 35% and 25% destroy twice as much wealth in comparison with transactions between 25% and 15%. The comparison of these results with the U.K., where Class 2 transactions perform worse than Class 1 and Class 1 are actually associated with wealth creation, further strengthens the case in

favor of a positive effect of mandatory shareholder voting in preventing wealth destruction in acquisitions.

To confirm this result, instead of comparing the U.K. sample with the entire population of U.S. acquisitions we compare U.K. deals only with U.S. deals which are similar according to observable characteristics. 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. In the subsample of relative size between 5% and 25% we compare U.K. Class 2 transactions with similar U.S. transactions and in the subsample of relative size larger than 25% we compare Class 1 U.K. transactions with similar U.S. transactions. Finally, we report the average treatment effects for the treated (being a U.K. deal) in the two subsamples. 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 C of Table 10).[22] These results are confirmed using various methods of Propensity Score matching.

4.6 Why does mandatory shareholder voting lead to higher acquirer returns?

Our findings so far indicate that average abnormal announcement returns for Class 1 transactions subject to shareholder voting are higher than for Class 2 transactions not subject to shareholder voting. Furthermore, Class 1 transactions in the U.K. have higher average abnormal returns than matched transactions of similar size in the U.S. that are not subject to shareholder voting. The interpretation is that mandatory shareholder voting leads to higher announcement returns.

In this section we explore the channels that may explain why mandatory shareholder voting leads to higher acquirer returns. Because ex post shareholders actually vote in favour of management 100% of times, any effect of shareholder voting must be ex ante on incentives. There are two main possibilities. The threat of shareholder voting may deter CEOs and boards from overpaying – a *deterrence effect*.

[22] 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.

Alternatively, the threat of voting by acquirer shareholders may effectively improve the bargaining position of acquirer CEOs relative to target CEOs – a *bargaining effect*.

Following Eckbo (2009) we begin by examining this latter possibility by looking at takeover premia for target shareholders, measured as the ratio between the consideration offered and the stock price of the target, 1 day, 1 week or 4 weeks prior to the announcement. If mandatory voting improves the bargaining position of acquirers relative to targets, we would expect takeover premia for targets in Class 2 transactions to be larger than takeover premia for targets in Class 1 transactions.

Table 11 presents the results. Using any of the three definitions of takeover premium above, we find no difference in takeover premia across Class 1 and Class 2 transactions. In particular, the magnitude is very similar (for example, mean premia over the stock price the day before the announcement are 35.6% for Class 1 and 35.7% for Class 2), and the difference is never statistically significant. These findings suggest that mandatory voting does not affect the relative bargaining position of acquirers and targets.

Next, we examine the possibility that mandatory voting deters acquirer CEOs and boards from overpaying. If that is the case, we would expect Class 1 deals to be more likely withdrawn than Class 2 ones following a large negative stock market reaction to their announcement. And among all withdrawn deals, we expect Class 1 deals to have larger negative returns than Class 2 ones.

This is indeed what we find. Among the group of Class 1 transactions that are badly received (announcement CAR smaller than -3%), 14.5% of these are later withdrawn by the management prior to the vote. By contrast, only 1 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 shareholder vote (i.e., Class 1 ones), 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%.[23] As we show in Table 12 Panel A these returns in Class 1 withdrawn deals are

[23] 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

much lower than the ones obtained in the nine Class 2 withdrawn cases. While there are few acquisitions in our sample that are first publicly announced and subsequently withdrawn, they still do suggest that a deterrence mechanism is at play.

To probe deeper into this possibility, we examine acquirer returns in deals with multiple bidders. Prior literature has pointed to deals with multiple bidders as those in which acquirers are most likely to overpay. Therefore, if a deterrence mechanism is at play, we expect acquirer returns to be larger in Class 1 deals relative to Class 2 deals, particularly in those deals with multiple bidders (as opposed to a single bidder). Panel B of Table 12 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 return 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 play, the available data does point to a deterrence effect of mandatory shareholder voting, which refrains CEOs and boards from overpaying.

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them at the EGM, potentially reflecting disagreement between different groups of shareholders about the likely long-term outcome of the transaction.

5 Conclusions

Self-dealing or overconfident managers make acquisitions that in theory the acquiring shareholders would not approve when asked. We study the effectiveness of shareholder voting as a corporate governance mechanism to prevent or avoid such acquisitions in practice. 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 25% relative size thresholds are defined as 'Class 1' and conditional on shareholder approval for completion.

We find that shareholders in the U.K. never vote against Class 1 transactions ex-post. Nevertheless, there is a striking difference between the performance of Class 1 and Class 2 transactions. We find that the abnormal announcement returns for Class 1 transaction are positive and significantly larger than those for the smaller 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 Multidimensional Regression Discontinuity research design support a causal interpretation of our finding.

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 can generate substantial value improvements for acquiring shareholders, because mandatory voting makes CEOs and boards more likely to refrain from paying more than the median shareholder considers the target is worth. At the same time many jurisdictions have chosen to exclude large acquisitions from the list of fundamental changes that are outside the scope of delegated board authority. The advantages of board delegation such as reduced legal costs and greater speed and flexibility are shown to be preferred to explicit shareholder approval. Our study shows that the benefits stemming from mandatory voting on large corporate acquisitions can be large, shedding new light on this trade-off.

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

To get a better sense of the interaction between acquirers and shareholders we looked for cases with shareholder opposition to the announcement of transactions from U.K. acquirers. We could only find one prominent recent case that is clearly 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.[24] 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". 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 percent, 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 (see Figure 6). The Prudential at this point did not withdraw the offer.

[24] 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 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.

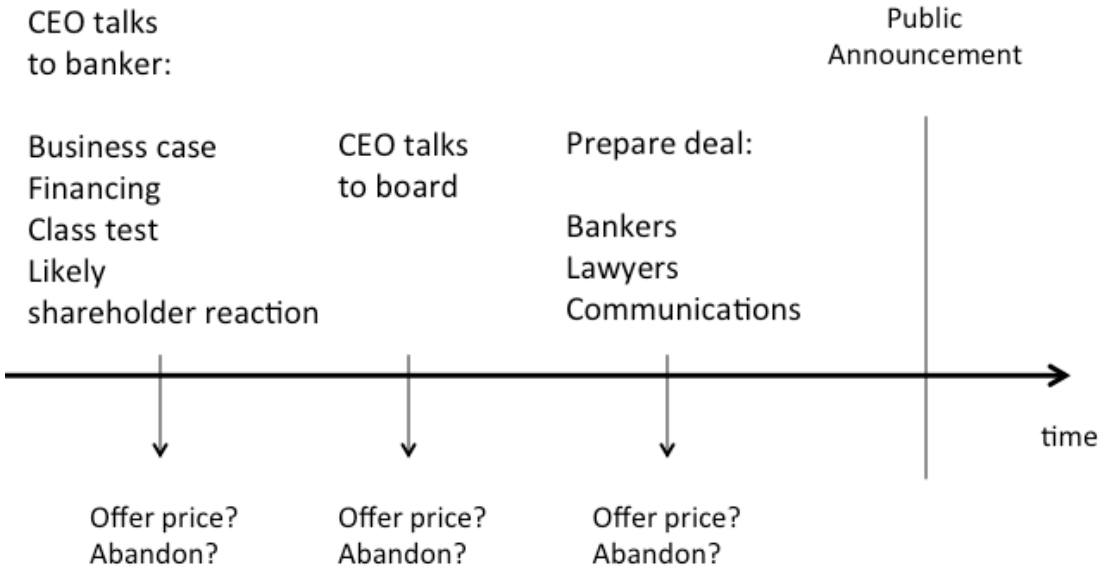
In an attempt to placate its own shareholders the Prudential revised its offer downward to £24bn. This revised offer is rejected by AIA on 1 June. On 2 June the Prudential abandons the offer.

On 7 June the shareholder meeting that would have voted on the deal goes 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. Timeline

The Figure describes a stylised timeline for a UK acquirer from the time of the initial acquisitions idea to the public announcement of the deal, and all the way to the shareholder vote, typically at an extraordinary shareholders meeting (EGM). 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 and the negotiations with the target. The pre-announcement period is not observable. All announced Class 1 deals and the timelines are observable. Offers can be revised upward or downward or abandoned at any time. Class 2 deals do not require a shareholder vote.

Class 1 and Class 2



Class 1 only

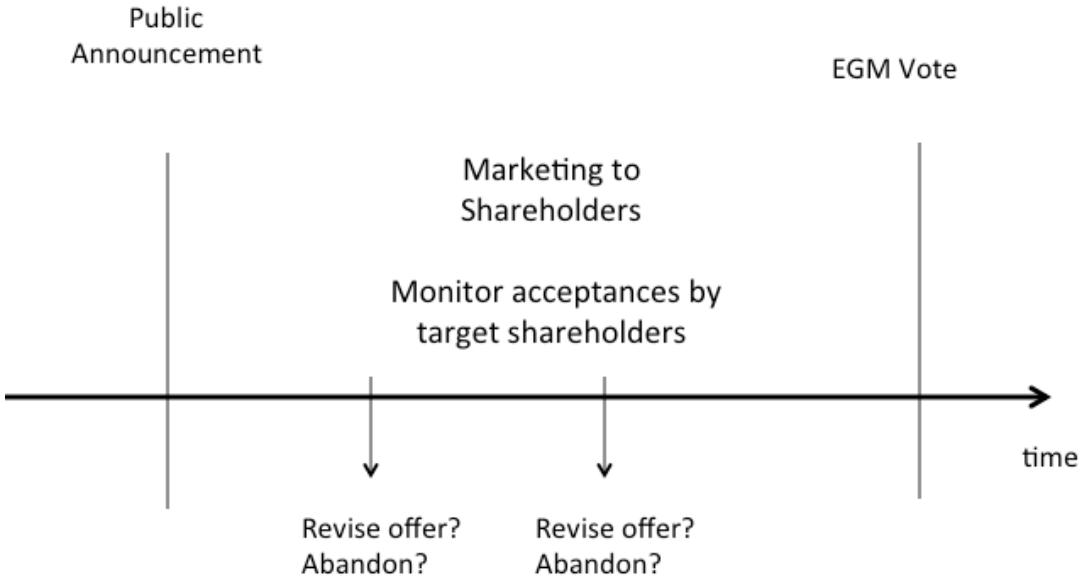


Figure 2. Density Plot of Assignment Variables

The figures shows kernel density estimates for the assignment variables in the full sample of UK acquisitions for the four class tests at announcement: relative size, relative profits, relative total assets and relative gross assets.

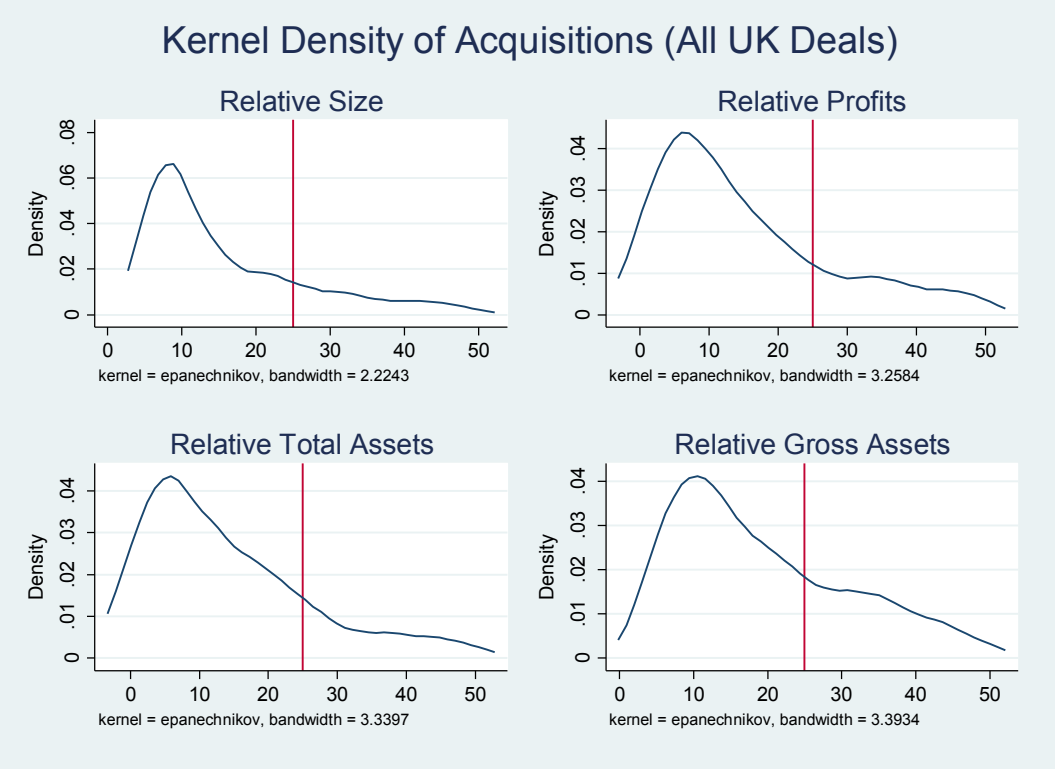


Figure 3. Class 1 and Class 2 Transactions: a fuzzy Multidimensional RDD

The Figure reports the jump in probability of Class 1 treatment around M=0 (first graph on the left) and the jump in CARs in the three days around the announcement around M=0 (second graph on the right). M is defined as the maximum of the four assignment variables corresponding to the Class tests (where each variable is first centered around its threshold of 25%). Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. On the two sides of the cutoff: we estimate quadratic functions. In the second graph of Panel A we eliminate from the sample the transactions which are misclassified (Class 1 with M<0 and Class 2 with M>0).

Figure 4. Time Pattern of Abnormal Dollar Returns to Acquisitions in UK and US

The Figure reports abnormal value returns to acquisitions in the US and the UK in billions of 2011 US dollars. The abnormal dollar returns are calculated by 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.

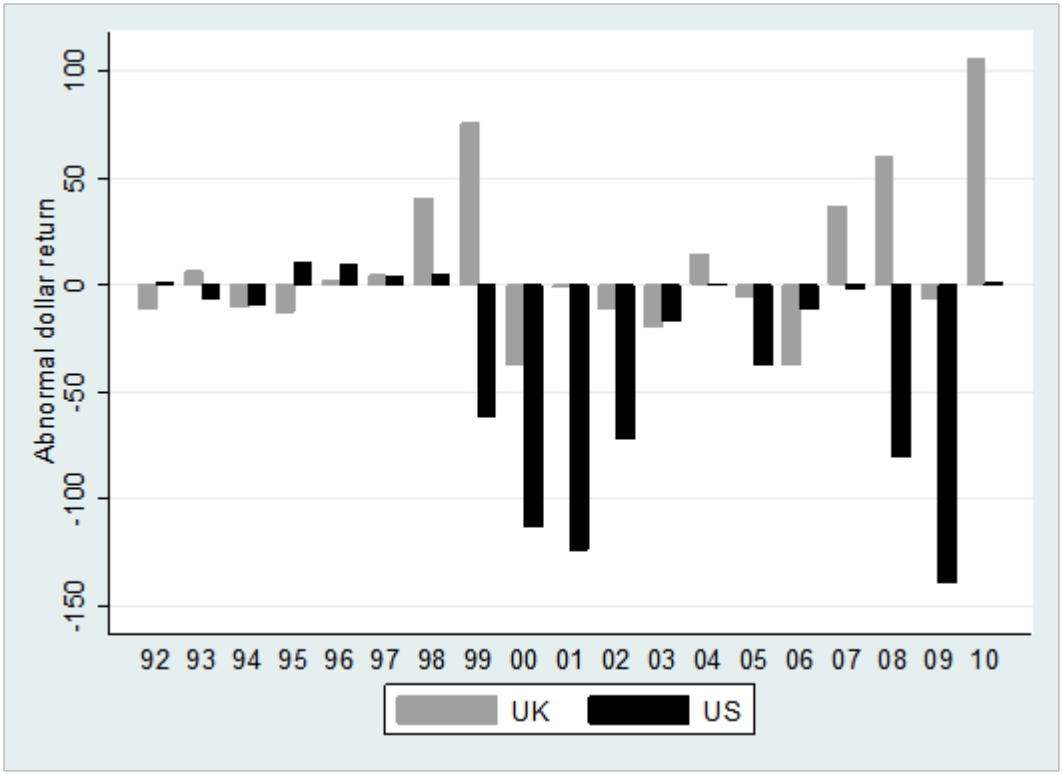


Figure 5. Average Abnormal Dollar Returns to Acquisitions in UK and US

The Figure reports average abnormal dollar returns to acquisitions in the US and the UK. 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. For the UK we distinguish between Class 1 and Class 2 transactions. For the US we distinguish between transactions with a relative size (deal value divided by market capitalization of the acquirer) larger and smaller than 25%

Figure 6. Prudential Plc's Failed Acquisitions of AIA

This figure reports the evolution of the cumulative abnormal returns of Prudential around the announcement of the acquisition of AIA. The first vertical line marks the date the deal was announced; the second and the third lines mark a negative recommendation from ISS and public opposition from a hedge fund; the third line is drawn on the day the Prudential formally dropped the bid; the solid line demarks the AGM.

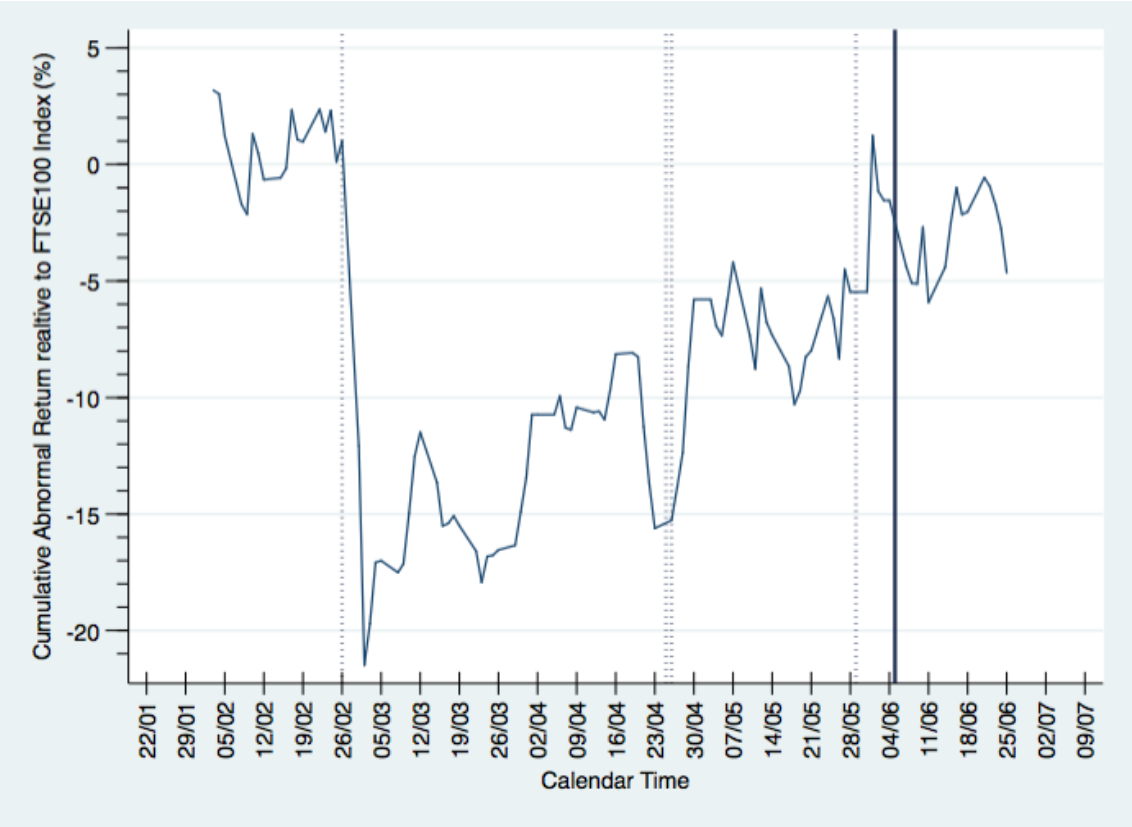


Table 1. Sample distribution of Class 1 and Class 2 Transactions

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 where there is no confounding information released in the announcement window.

	Number	Percentage
Class 1 Transactions		
Completed deals	332	86.7%
Withdrawn deals	20	5.2%
Other	31	8.1%
Total	383	
Class 2 Transactions		
Completed deals	777	88.2%
Withdrawn deals	9	1.0%
Other	95	10.8%
Total	881	
Class 1 Completed Transactions		
EGM date within 1 month of announcement	221	66.6%
EGM date between 1 month and 6 months	101	30.4%
EGM dated after 6 months	10	3.0%
Total	332	

Table 2. Sample Distribution by Announcement Year

The sample consists of 1,109 completed mergers and acquisitions (listed in SDC) made by acquirers listed in the Main Market of the LSE between 1992 and 2010.

Year of announcement	No of transactions	Percent of sample	No of Class 2 transactions	No of Class 1 transactions	Percent of Class 1
1992	54	4.9%	39	15	27.8%
1993	62	5.6%	46	16	25.8%
1994	72	6.5%	49	23	31.9%
1995	78	7.0%	51	27	34.6%
1996	83	7.5%	49	34	41.0%
1997	94	8.5%	67	27	28.7%
1998	112	10.1%	74	38	33.9%
1999	104	9.4%	62	42	40.4%
2000	93	8.4%	60	33	35.5%
2001	76	6.9%	59	17	22.4%
2002	38	3.4%	32	6	15.8%
2003	42	3.8%	34	8	19.0%
2004	45	4.1%	31	14	31.1%
2005	37	3.3%	27	10	27.0%
2006	26	2.3%	22	4	15.4%
2007	41	3.7%	32	9	22.0%
2008	28	2.5%	25	3	10.7%
2009	8	0.7%	6	2	25.0%
2010	16	1.4%	12	4	25.0%
Total	1,109		777	332	29.9%

Table 3. Differences in CARs between Class 1 and Class 2 Transactions

This table reports cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition (in percent). Abnormal returns are calculated by subtracting the FTSE index from the raw return of the firm's equity. 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. We split the sample between Class 1 and Class 2 transactions. We report also the results: in the (-2,2) event window; in the (-1,1) event window but including back cases previously filtered out because of confounding information; in the (-1,1) event window after a winsorization at 1%. We report T-statistics for the difference of the means and the Wilcoxon z-statistics for the difference of the medians. *, ** and *** denote significance at .10, .05 and .01 levels, respectively.

Differences in Announcement Abnormal Returns					
		Class 1 transactions (1)	Class 2 transactions (2)	Difference (1)-(2)	t/z statistic for the tests of difference
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		
	Tot.	*$13,632*	*-$2,958*		
	No of observations	332	777		
Robustness					
CAR (-2,+2)	Mean	2.66	1.05	1.61	3.60***
	Median	2.00	0.35	1.65	3.93***
	No of observations	332	777		
CAR (-1,+1) including cases with confounding information	Mean	2.05	0.96	1.09	2.88***
	Median	1.10	0.51	0.59	2.64***
	No of observations	446	937		
CAR (-1,+1) after winsorization	Mean	2.46	0.82	1.64	4.93***
	Median	1.60	0.46	1.14	4.05***
	No of observations	332	777		

Table 4. Summary Statistics for Control Variables

The sample consists of 1,109 completed mergers and acquisitions (listed in SDC) made by acquirers listed in 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). 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. Stock is a dummy variable equal to 1 if the deal is at least partially stock financed. All cash is a dummy variable equal to 1 if the deal is purely-cash financed. Private is a dummy variable equal to 1 if the target is a private company. Public is a dummy variable equal to 1 if the target is a public company. Hostile is a dummy variable equal to 1 if the deal is hostile. Industry activity is calculated as the number of target firms with the same first three-digit SIC code acquired each year. Cross border is a dummy variable equal to 1 if the target is not from the UK. Merger is a dummy variable equal to 1 if the deal is a merger. Diversifying is a dummy variable equal to 1 if the bidder and target do not share the Fama-French 12 industry. Multiple bidders is a dummy value which takes the value of 1 if there is more than one bidder for the same target. Firm size is the book value of the total assets. Tobin 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. 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).

Variable	No of observations	Mean	Standard Deviation	Q25	Median	Q75
Panel 1 - Deal characteristics						
Stock	1109	0.22	0.41	0	0	0
All cash	1109	0.46	0.49	0	0	1
Private target	1109	0.55	0.49	0	1	1
Public target	1109	0.12	0.33	0	0	0
Hostile	1109	0.01	0.07	0	0	0
Industry activity	1109	26.13	50.69	4	10	22
Cross border	1109	0.36	0.48	0	0	1
Merger	1109	0.39	0.49	0	0	1
Diversifying	1109	0.35	0.47	0	0	1
Multiple bidders	1109	0.01	0.11	0	0	0
Panel 2 - Acquirer characteristics						
Firm size (millions $)	990	1143.34	4377.48	64.90	166.88	584.57
Tobin's q	969	1.79	1.22	1.13	1.46	1.99
Free cash flow	959	-0.01	0.09	-.04	-.00	0.03
Leverage ratio	965	0.14	0.12	0.05	0.13	0.21
Panel 3 - Class 1 Ratios						
Relative size	971	22.98	36.59	7.71	12.45	24.36
Relative Gross Assets	276	61.61	410.70	4.54	12.48	27.68
Relative Profits	419	-196.70	3441.70	2.08	10.26	28.79
Relative Gross Capital	265	58.44	281.70	10.34	19.59	41.95

Table 5. Differences in Acquirer and Deal Characteristics between Classes

The sample consists of 1,109 completed mergers and acquisitions (listed in SDC) made by acquirers listed in the Main Market of the LSE between 1992 and 2010. We split the sample in Class 1 and Class 2 transactions. The dependent variable is the cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition (in percent). 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. Stock is a dummy variable equal to 1 if the deal is at least partially stock financed. All cash is a dummy variable equal to 1 if the deal is purely-cash financed. Private is a dummy variable equal to 1 if the target is a private company. Public is a dummy variable equal to 1 if the target is a public company. Hostile is a dummy variable equal to 1 if the deal is hostile. Industry activity is calculated as the number of target firms with the same first three-digit SIC code acquired each year. Cross border is a dummy variable equal to 1 if the target is not from the UK. Merger is a dummy variable equal to 1 if the deal is a merger. Diversifying is a dummy variable equal to 1 if the bidder and target do not share the Fama-French 12 industry. Multiple bidders is a dummy value which takes the value of 1 if there is more than one bidder for the same target. Firm size is the book value of the total assets. Tobin 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. 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.

	Class 2		Class 1			
	Mean	Median	Mean	Median	Diff.	
Deal characteristics						
Stock	0.02	0.00	0.09	0.00	-0.07***	(-5.27)
All cash	0.50	1.00	0.35	0.00	0.16***	(4.79)
Private	0.61	1.00	0.42	0.00	0.19***	(5.87)
Public	0.06	0.00	0.27	0.00	-0.21***	(-10.30)
Hostile	0.00	0.00	0.02	0.00	-0.02***	(-3.44)
Industry activity	28.60	11.00	20.35	8.00	8.25**	(2.49)
Cross border	0.37	0.00	0.33	0.00	0.04	(1.39)
Merger	0.32	0.00	0.58	1.00	-0.26***	(-8.27)
Diversifying	0.35	0.00	0.35	0.00	0	(0.16)
Multiple bidders	0.00	0.00	0.04	0.00	-0.04***	(-4.63)
Acquirer characteristics						
Firm size (millions $)	1033.18	168.95	1373.98	159.62	-340.79	(-1.15)
Tobin Q	1.72	1.44	1.95	1.55	-0.23***	(-2.75)
Free CF	-0.01	-0.00	-0.02	0.00	0	(0.68)
Leverage ratio	0.14	0.13	0.15	0.12	0	(-0.36)
Class 1 Ratios						
Relative size	11.59	9.16	46.49	33.17	-34.90***	(-15.58)
Relative Gross Assets	54.41	5.66	69.12	24.90	-14.71	(-0.30)
Relative Profits	-37.54	6.00	-414.35	27.79	376.81	(1.11)
Relative Gross Capital	48.58	10.45	68.38	40.66	-19.80	(-0.57)

Table 6. Multivariate Analysis of Acquirer Returns

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.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. Relative size is calculates as the deal value divided by the market capitalization of the acquirer as reported by Datastream in the year end prior to deal announcement. Stock is a dummy variable equal to 1 if the deal is at least partially stock financed. All cash is a dummy variable equal to 1 if the deal is purely-cash financed. Private is a dummy variable equal to 1 if the target is a private company. Public is a dummy variable equal to 1 if the target is a public company. Hostile is a dummy variable equal to 1 if the deal is hostile. Industry activity is calculated as the number of target firms with the same first three-digit SIC code acquired each year. Cross border is a dummy variable equal to 1 if the target is not from the UK. Merger is a dummy variable equal to 1 if the deal is a merger. Diversifying is a dummy variable equal to 1 if the bidder and target do not share the Fama-French 12 industry. Multiple bidders is a dummy value which takes the value of 1 if there is more than one bidder for the same target. Firm size is the log of the total assets. Tobin 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. 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

Panel A. Full Sample

	Dependent variables CAR		
	(1)	(2)	(3)
Class 1	1.804***	2.405***	2.479***
	(4.71)	(5.60)	(5.61)
Relative size		-0.006	-0.006
		(-1.13)	(-1.09)
Stock		-0.381	-0.297
		(-0.70)	(-0.53)
All cash		-0.172	-0.103
		(-0.47)	(-0.28)
Private		0.173	0.137
		(0.50)	(0.39)
Public		-1.437**	-1.431**
		(-2.17)	(-2.01)
Hostile		-3.674*	-3.466
		(-1.70)	(-1.56)
Industry activity		-0.000	0.000
		(-0.07)	(0.03)
Cross border		0.222	0.273
		(0.61)	(0.72)
Merger		-0.575	-0.495
		(-1.46)	(-1.23)
Diversifying		0.517	0.527

		(1.34)	(1.33)
Multiple bidders		-1.583	-1.661
		(-0.87)	(-0.92)
Firm size			-0.169
			(-1.16)
Tobin's q			0.119
			(0.56)
Free cash flow			1.759
			(0.82)
Leverage ratio			-0.300
			(-0.18)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Constant	-0.318	-0.368	1.546
	(-0.41)	(-0.45)	(0.75)
N	1109	971	941
R-sq	0.066	0.101	0.111

Panel B. Subsamples

	Dependent variables CAR			
	Acquirer Bottom Size Quartile (1)	Acquirer Top Size Quartile (2)	Private Targets (3)	All-cash Deals (4)
Class 1	2.215*	1.670*	2.357***	1.718***
	(1.94)	(1.75)	(3.43)	(2.60)
Deal controls	Yes	Yes	Yes	Yes
Acquirer controls	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
N	185	264	502	430
R-sq	0.246	0.282	0.118	0.170

Table 7. Class 1 and Class 2 Transactions: a Propensity Score Matching

The sample consists of 1109 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 Neighbour matching method. The standard errors are bootstrapped (200 replications). ATT refers to the average treatment effect for the treated (Imbens, 2004).

Method	No of treated (Class 1)	No of control (Class 2)	ATT	Standard error	t-statistic
Kernel	332	777	1.32	0.63	2.07**
Nearest Neighbour	332	229	1.69	0.61	2.74***

Table 8. Class 1 and Class 2 Transactions in Narrow Bands

In this table the sample includes only large Class 2 transactions (with a relative size bigger than 15 %) and small Class 1 transactions (with a relative size smaller than 35%). Panel A reports the univariate analysis. This table reports cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition (in percent). 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 B 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. 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. The control variables are the same as the ones used in Table 5. T-statistics are in parenthesis. *,** and *** denote significance at .10, .05 and .01 levels, respectively

Panel A. Univariate Analysis

		Differences in Announcement Abnormal Returns in			
		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		
	Tot.	*$5,858*	*-$1,164*		
	No observations	175	120		

Panel B. Multivariate Analysis

	Dependent variables CAR		
	(1)	(2)	(3)
Class 1	2.469***	3.418***	3.740***
	(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
No observations	295	295	284
R-square	0.120	0.216	0.244

Table 9. Class 1 and Class 2 Transactions: a Fuzzy Multidimensional RDD

Panel A of Table 9 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 cutoff kernel regressions are estimated. Estimates are based on the use of the optimal bandwidth calculated following Imbens and Kalyanaraman (2009). Model 2 and 3 are obtained with different bandwidths (± 30% of optimal bandwidth). Panel B reports two placebo tests: the treatment effect is calculated at placebo thresholds of M=-5 and M=5. Panel C reports average treatment effects of Sharp RDD (with optimal bandwidth) using each covariate (Firm Size, Hostile, Industry activity, Cross border, TobinQ, FreeCF, 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)

Panel A. Fuzzy MRDD

	M = 0 (1)		M = 0 (2)		M = 0 (3)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat
Jump in outcome (CAR)	3.96	2.00**	3.22	1.54	3.10	1.73*
Jump in probability of treatment (Class 1)	0.50	1.92*	0.51	2.90***	0.51	2.18**
Ratio (Local Wald Estimator)	7.90	1.95*	6.34	1.81*	6.01	1.83*
Bandwidth	7.34		5.14		9.54	

Panel B. Placebo Test on the Thresholds

	M = -5 (1)		M = 5 (2)	
	Coef	t-stat	Coef	t-stat
Jump in outcome (CAR)	-2.89	-1.43	0.83	0.36
Jump in probability of treatment (Class 1)	0.19	0.378	-0.46	-1.53
Ratio (Local Wald Estimator)	-15.48	-0.69	-1.80	-0.38
Bandwidth	8.69		8.63	

Panel C. Balance Tests on Covariates

Covariate	Local Wald Estimator on M=0	
	Coef	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 Q	-1.31	-1.15
FreeCF	-0.08	-1.01
Leverage ratio	0.05	0.12

Table 10. Comparison with the U.S.

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 A 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 B 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 three different matching techniques: Kernel matching method and Nearest Neighbor matching method. The standard errors are bootstrapped (1000 replications).

Panel A. Abnormal Returns in the U.S.

	Dependent variables CAR		
	All sample	Narrow bands	All sample
	(1)	(2)	(3)
Transactions with RS > 25%	1.687***	-0.062	
	(5.89)	(-0.06)	
Transactions with RS > 100%			2.801***
			(3.57)
Deal controls	Yes	Yes	Yes
Acquirer controls	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
No observations	8288	2306	8288
R-sq	0.046	0.050	0.046

Panel B. Abnormal Dollar Returns in the US

Window		Larger than 25%	Smaller than 25%
		(1)	(2)
		All sample	
(-1,+1)	Mean	-$58.25	-$10.29
	Tot.	*-$214,114*	*-$65,438*
	No observations	3676	6361
		Narrow bands	
(-1,+1)	Mean	-$44.12	-$23.31
	Tot.	*-$42,932*	*-$41,996*
	No observations	973	1780

Panel C. Comparison of Abnormal Dollar Returns in the U.S. and in the U.K.

Method	N. of treated (U.K.)	N. of control (U.S.)	ATT	Standard error	t-statistic
Class 1\ Larger than 25%					
Kernel	245	4456	$90.54	58.92	1.54*
Nearest Neighbor	245	829	$124.97	83.03	1.51*
Class 2\ Smaller than 25%					
Kernel	628	7138	$1.24	6.73	0.19
Nearest Neighbor	628	1630	$1.23	8.28	0.15

Table 11. Target Shareholders Wealth Effects

This table reports percent takeover premia. The takeover premium is computed as the ratio of the per-share offer price to the target closing stock price before the announcement date. We use the target closing stock price, respectively, one day, one week and four weeks before the announcement. We split the sample between Class 1 and Class 2 transactions. 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.

Differences in Takeover Premia					
		Class 1 (1)	Class 2 (2)	Diff. (1)-(2)	t/z stat for tests of difference
Takeover premium (1 Day)	Mean	35.62	35.75	-0.13	-0.025
	Median	33.32	29.38	3.94	0.103
Takeover premium (1 Week)	Mean	41.57	39.46	2.11	0.368
	Median	39.70	33.36	6.34	0.358
Takeover premium (4 Weeks)	Mean	44.65	44.90	-0.25	-0.038
	Median	39.74	38.01	1.73	0.398
No observations		95	46		

Table 12. Deterrence Effect of Mandatory Voting

Panel A reports cumulative abnormal returns (CARs) in the three days around the announcement of acquisitions that are publicly announced and subsequently withdrawn. Panel B reports cumulative abnormal returns (CARs) in the three days around the announcement of the acquisition of transactions with multiple and single bidders. We report separately the sample of completed deals only and all announced deals. In both panels 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.

Panel A. Withdrawn Deals

Announcement Abnormal Returns of Withdrawn Deals			
		Class 1	Class 2
CAR (-1,+1)	Mean	-1.70	-0.76
	Median	-1.00	0.36
	25th percentile	-6.10	-1.20
	5th percentile	-11.90	-3.90
	No observations	20	9

Panel B. Multiple Bidders

		Class 1	Class 2	Difference
Only Completed Deals				
Multiple Bidders	CAR (-1,+1)	-0.46	-6.30	5.84
	Dollar Returns ($M)	768.00	-206.00	974.00
	No observations	12	2	
Single Bidders	CAR	2.70	0.80	1.90
	Dollar Returns ($M)	14.00	-3.30	17.30
	No observations	320	775	
Difference	CAR (-1,+1)	-3.16	-7.10	3.94
	Dollar Returns ($M)	745.00	-202.70	956.70
All Announced Deals				
Multiple Bidders	CAR (-1,+1)	-1.20	-0.93	-0.27
	Dollar Returns ($M)	217.00	-59.00	276.00
	No observations	23	6	
Single Bidders	CAR	2.20	0.85	1.35
	Dollar Returns ($M)	12.00	-4.00	16.00
	No observations	360	875	
Difference	CAR (-1,+1)	-3.40	-1.78	-1.62
	Dollar Returns ($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 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 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
Relative profits	Pre tax income of the target divided by pre tax income of the acquirer
Relative gross capital	(Deal value plus liabilities of the target) divided by (market capitalization of the acquirer plus liabilities of the acquirer

Appendix II. Financial Services Authority Listing Rules Class Tests

Class tests			
1G	This Annex sets out the following *class tests*:		
	(1)	the gross assets test;	
	(2)	the profits test;	
	(3)	the consideration test; and	
	(4)	the gross capital test.	
The Gross Assets test			
2R	(1)	The assets test is calculated by dividing the gross assets the subject of the transaction by the gross assets of the *listed company*.	
	(2)	The gross assets of the *listed company* means the total non-current assets, plus the total current assets, of the *listed company*.	
	(3)	For:	
		(a)	an acquisition of an interest in an undertaking which will result in consolidation of the assets of that undertaking in the accounts of the listed company; or
		(b)	a disposal of an interest in an undertaking which will result in the assets of that undertaking no longer being consolidated in the accounts of the *listed company*;
		the gross assets the subject of the transaction means the value of 100% of that undertakings assets irrespective of what interest is acquired or disposed of.	
	(4)	For an acquisition or disposal of an interest in an undertaking which does not fall within paragraph (3), the gross assets the subject of the transaction means:	
		(a)	for an acquisition, the consideration together with liabilities assumed (if any); and
		(b)	for a disposal, the assets attributed to that interest in the listed companys accounts.
	(5)	If there is an acquisition of assets other than an interest in an undertaking, the assets the subject of the transaction means the consideration or, if greater, the book value of those assets as they will be included in the *listed company's* balance sheet.	
	(6)	If there is a disposal of assets other than an interest in an undertaking, the assets the subject of the transaction means the book value of the assets in the *listedcompany's* balance sheet.	
3G	The *FSA* may modify paragraph 2R to require, when calculating the assets the subject of the transaction, the inclusion of further amounts if contingent assets or arrangements referred to in LR 10.2.4 R (indemnities and similar arrangements) are involved.		
The Profits test			
4R	(1)	The profits test is calculated by dividing the profits attributable to the assets the subject of the transaction by the profits of the *listed company*.	
	(2)	For the purposes of paragraph (1), profits means:	
		(a)	profits after deducting all charges except taxation; and
		(b)	for an acquisition or disposal of an interest in an undertaking referred to in paragraph 2R (3)(a) or (b) of this Annex, 100% of the profits of the undertaking (irrespective of what interest is acquired or disposed of).
The Consideration test			
5R	(1)	The consideration test is calculated by taking the consideration for the transaction as a percentage of the aggregate market value of all the ordinary shares (excluding *treasury shares*) of the *listed company*.	
	(2)	For the purposes of paragraph (1):	
		(a)	the consideration is the amount paid to the contracting party;
		(b)	if all or part of the consideration is in the form of *securities* to be traded on a market, the consideration attributable to those *securities* is the aggregate market value of those *securities*; and
		(c)	if deferred consideration is or may be payable or receivable by the *listed* company in the future, the consideration is the maximum total consideration payable or receivable under the agreement.
	(3)	If the total consideration is not subject to any maximum (and the other class tests indicate the transaction to be a *class 2 transaction*) the transaction is to be treated as a *class 1 transaction*.	
	(3A)	If the total consideration is not subject to any maximum (and the other class tests indicate the transaction to be a *class 3 transaction*) the transaction is to be treated as a *class 2 transaction*.	
	(4)	For the purposes of sub-paragraph (2)(b), the figures used to determine consideration consisting of:	
		(a)	*securities* of a *class* already *listed*, must be the aggregate market value of all those *securities* on the last *business day* before the announcement; and
		(b)	a new *class* of *securities* for which an application for *listing* will be made, must be the expected aggregate market value of all those *securities*.
	(5)	For the purposes of paragraph (1), the figure used to determine market capitalisation is the aggregate market value of all the ordinary *shares* (excluding *treasury shares*) of the *listed company* at the close of business on the last *business day* before the announcement.	
6G	The *FSA* may modify paragraph 5R to require the inclusion of further amounts in the calculation of the consideration. For example, if the purchaser agrees to discharge any liabilities, including the repayment of inter-company or third party debt, whether actual or contingent, as part of the terms of the transaction.		

	The Gross Capital test			
R	1)	The gross capital test is calculated by dividing the gross capital of the company or business being acquired by the gross capital of the *listed company*.		
	2)	The test in paragraph (1) is only to be applied for an acquisition of a *company* or business.		
	3)	For the purposes of paragraph (1), the gross capital of the *company* or business being acquired means the aggregate of:		
		a)	the consideration (as calculated under paragraph 5R of this Annex);	
		b)	if a *company*, any of its *shares* and *debt securities* which are not being acquired;	
		c)	all other liabilities (other than current liabilities) including for this purpose minority interests and deferred taxation; and	
		d)	any excess of current liabilities over current assets.	
	4)	For the purposes of paragraph (1), the gross capital of the *listed company* means the aggregate of:		
		a)	the market value of its *shares* (excluding *treasury shares*) and the issue amount of the *debt security*;	
		b)	all other liabilities (other than current liabilities) including for this purpose minority interests and deferred taxation; and	
		c)	any excess of current liabilities over current assets.	
	5)	For the purposes of paragraph (1):		
		a)	figures used must be, for *shares* and *debt security* aggregated for the purposes of the gross capital percentage ratio, the aggregate market value of all those *shares* (or if not available before the announcement, their nominal value) and the issue amount of the *debt security*; and	
		b)	for*shares* and *debt security* aggregated for the purposes of paragraph (3)(b), any *treasury shares* held by the *company* are not to be taken into account.	
	Figures used to classify assets and profits			
R	1)	For the purposes of calculating the tests in this Annex, except as otherwise stated in paragraphs (2) to (6), figures used to classify assets and profits, must be the figures shown in the latest published audited consolidated accounts or, if a *listed company* has, or will have, published a preliminary statement of later annual results at the time the terms of a transaction are agreed, the figures shown in that preliminary statement.		
	2)	If a balance sheet has been published in a subsequently published interim statement then gross assets and gross capital 2should be taken from the balance sheet published in the interim statement.		
	3)	a)	The figures of the *listed company* must be adjusted to take account of subsequent transactions which have been notified to a *RIS* under LR 10.4 or LR 10.5.	
		b)	The figures of the target company or business must be adjusted to take account of subsequent transactions which would have been a *class 2 transaction* or greater when classified against the target as a whole.	
	4)	Figures on which the auditors are unable to report without modification must be disregarded.		
	5)	When applying the *percentage ratios* to an acquisition by a *company* whose assets consist wholly or predominantly of cash or short-dated *securities*, the cash and short-dated *securities* must be excluded in calculating its assets and market capitalisation.		
	6)	The principles in this paragraph also apply (to the extent relevant) to calculating the assets and profits of the target company or business.		
G		The *FSA* may modify paragraph 8R(4) in appropriate cases to permit figures to be taken into account.		
		Anomalous results		
0G		If a calculation under any of the *class tests* produces an anomalous result or if a calculation is inappropriate to the activities of the *listed company*, the *FSA* may modify the relevant *rule* to substitute other relevant indicators of size, including industry specific tests.		