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Disentangling the Link between Stock and Accounting Performance in Acquisitions

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Abstract: We study the accounting and stock performance of 4,547 US acquisitions during 1989 and 2008. We categorise acquisitions into four types based on the four possible combinations of positive or negative abnormal stock performance and abnormal accounting performance. First, we compare the bidder, bid and target characteristics across the four types of acquisitions. We find significant differences. Second, with the help of existing theories we explain these differences in bidder, bid and target characteristics by differences in the acquisition motives.

Keywords: Mergers and acquisitions, performance measurement, synergies, preemption, overvaluation, corporate governance, agency problems

JEL-Classification: G34, G3, G14

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1. Introduction

Empirical studies on mergers and acquisitions (M&As) measure the wealth effects of such transactions for shareholders using two different methodologies. One such methodology is the event study methodology, which may focus on the short run, i.e. the announcement effect to M&As, or the long run. The other methodology consists of focusing on improvements in accounting or operating performance subsequent to the acquisition. Table 1 summarises the results from the main event studies on M&As. Panel A shows that short run event studies find either significantly negative abnormal returns (e.g., Servaes 1991) or insignificant abnormal returns earned by the bidding shareholders. The results obtained from long run event studies are highly dependent on whether the acquisition is a merger, i.e. a stock swap, or a tender offer, i.e. a cash offer. Still, Panel B suggests that, even by keeping the type of acquisition fixed, there is disagreement as to whether M&As create or destroy value. For example, while Rau and Vermaelen (1998) find significant 3-year cumulative abnormal returns (CARs) of -4% for mergers Mitchell and Stafford (2000) do not find any significant CARs for the same length of event window.

[Insert Table 1 about here]

Similar to the event studies on M&As, those studies that measure the shareholder wealth effects by accounting performance tend to find a variety of performance outcomes. While the majority of studies (e.g., Andrade et al. 2001) find an improvement in accounting performance following the acquisition some studies do not find any significant improvement (e.g., Dickerson et al. 1997). Yet, at least another study finds a significant deterioration in accounting performance (Ravenscraft and Scherer 1989).

[Insert Table 2 about here]

The above review of event studies and accounting performance studies on the wealth gains accruing to the bidding shareholders gives rise to two stylised facts. First and in a nutshell, studies accounting performance paint a rosier picture of the wealth effects of M&As accruing to bidders than event studies. Second and more importantly, both types of studies suggest that there is great diversity in terms of performance outcomes.

Explaining this diversity of performance outcomes will be the aim of this paper. More precisely, we shall study each of the four possible combinations of positive or negative abnormal stock returns and abnormal accounting performance. In a first step, we shall compare the bidder, bid and target characteristics across each of these four combinations. In a second step, we shall identify possible motives behind acquisitions characterised by each performance outcome. In other words, can each combination of stock returns and accounting performance be explained by a particular motive behind the merger transaction?

While our paper has some similarities with the literature on the motives behind takeovers (see e.g. Berkovitch and Narayanan 1993), it is also different from that literature in at least three major aspects. First, while Berkovitch and Narayanan (1993) focus on stock returns, we study both stock returns and accounting performance. The reason for this is that the different combinations of stock returns and accounting performance may be the performance outcome of different acquisition motives. Second, in addition to the three motives considered by Berkovitch and Narayanan (the motives they consider are synergies, hubris and agency problems), we identify preemption and the overvaluation of the bidder's stock as additional motives.

The remainder of the paper is organized as follows. Section 2 reviews the data sources, the sample selection, the measures of performance as well as bidder, bid and target characteristics used in this study. Section 3 discusses the empirical results; the aim being on identifying bidder,

bid and target characteristics that may explain a particular performance outcome. Section 4 reconciles our findings as to the differences across the four performance outcomes in terms of bidder, bid and target characteristics with possible theories on acquisition motives. We find evidence that combinations of performance outcomes are dominated by a particular motive driving the acquisition. Section 5 concludes.

2. Data sources, sample selection and measurement of performance

This section is structured as follows. We first explain the data sources used and the sample selection process. We then discuss the measurement of abnormal accounting performance, followed by a discussion of the measurement of stock performance. Finally, we define the bidder, bid and target characteristics used in this study.

2.1 Data sources and sample selection

The initial list of M&As was obtained from Thomson Financial SDC Platinum. We analyse the performance of US acquisitions that were announced and completed (Item STAT) between January 1989 and December 2008.[1] We then proceed by applying the following filters to the sample.

We retain only those acquisitions where the share of the acquirer in the target firm's equity was below 50% before and above 50% after the transaction (Items PHDA and A_POSTMERGEOWN_PCT). Alternatively, the acquirer had to buy 50% of the shares outstanding during the acquisition process (Item PC TOWN). As Morck et al. (1990) argue that the inclusion of small transactions can bias the measurement of performance, we only include those acquisitions with an absolute transaction value (Item VAL) of at least US$ 50 million (Item

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[1] Transactions have to be completed by 31 December 2008 as we require accounting data for at least three years following the year of the completion.

VAL). This is in line with Harford (2005) who also excludes small mergers. The acquirer and the target firm are *both* US corporations and the acquirer must be listed on a US stock exchange. We exclude international (Item MATYPE IMA) and overseas mergers (Item MATYPE OMA). We exclude mergers involving banks or insurance companies as their financial accounts (e.g. cash flow) are not directly comparable to those of firms from other industries. For acquirers to be included in our final sample stock price and accounting data must be available from CRSP (Center for Research in Security Prices) or alternatively from COMPUSTAT for the three years before as well as the three years after the acquisition. Furthermore, information on the method of payment of the acquirer must be available from SDC. This selection process results in a sample of 9,180 acquisitions. From those 9,180 acquisitions we only retain single bids/acquisitions, i.e. the first bid in a series of acquisitions by the same bidder. This results in a final sample of 4,547.

2.2 Measurement of the bidder's abnormal accounting performance

Our measure of accounting performance is based on operating cash flow. In line with Barber and Lyon's (1996) recommendation, it is scaled by sales.[2] The operating cash flow is defined as sales (CRSP Item 12) minus the cost of goods sold (Item 41) minus selling and administrative expenses (Item 189) plus depreciation and goodwill amortization expenses (Item 196). The operating cash flow is then divided by sales at the end of the previous year.

We compare the pre- and post-acquisition performance of the acquirer with the performance of two different portfolios of matched firms. The procedure closely follows Barber and Lyon (1996) who also use the portfolio approach, and to a lesser extent Ghosh (2001) who uses the matched firm approach. The first portfolio consists of all the firms with the *same* two-digit SIC code as the acquirer and of a similar size (same quintile of book value of total assets for the last available

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[2] We are grateful to an anonymous referee for this suggestion. The results are qualitatively similar if we scale the operating cash flow by the book value of assets. These results are available upon request.

year before the merger announcement as the acquirer) and pre-event performance (same quintile of operating cash flow ratio (return on assets) for the last available year before the merger announcement as the acquirer). This portfolio is called the "industry-matched portfolio" in what follows. The second portfolio of matched firms consists of all the firms with a *different* two-digit SIC code than that of the acquirer, but of a similar size (same quintile of book value of total assets for the last available year before the merger announcement as the acquirer) and pre-event performance (same quintile of operating cash flow ratio (return on assets) for the last available year before the merger announcement as the acquirer). This portfolio is called the "non-industry-matched portfolio".

Importantly, both of our peer groups or portfolios are matched by pre-event performance. Indeed, Barber and Lyon (1996) show that, when the sample firms experience above- or below-average pre-event performance, it is important to match the peer firms by pre-event performance. Indeed, it is likely that our sample firms experience above-average pre-event performance. Table 3 investigates this issue in detail. The table reports the mean and median cash flow returns for the bidders for each of the three years before and after the acquisition. Furthermore, the table also reports the mean and median differences between each bidder's cash flow returns and that for the industry-matched portfolio. Finally, we also compute the mean and median for the equivalent difference based on the non-industry-matched portfolio. The table shows that there is a drop in the cash flow return after the acquisition relative to both the industry-matched and non-industry matched portfolio. This is the case for all three measures. Our results are similar to those of Ravenscraft and Scherer (1989) and those of Dickerson et al. (1997) who find a similar drop in industry-adjusted performance, of about 2%. The industry as well as the non-industry adjusted performance is significantly negative in all the years subsequent to the completion of the acquisition, but significantly positive in most of the years in the pre-merger period. These

patterns suggest that it is important to select the peer firms by matching them by pre-event performance with the sample firms.

[Insert Table 3 about here]

2.3 Measurement of the bidder's abnormal stock returns at the announcement

We measure the short-term abnormal stock price performance of the acquirer by calculating the cumulative abnormal returns (CARs) based on the event study methodology. The tables in the paper are based on the [-2;+2] window with day 0 being the announcement day of the acquisition and day -2 and day +2 being the second day preceding and the second day following the announcement, respectively. In addition, we have checked the robustness of our results using various other window lengths (e.g. [-10;+10]). The daily abnormal returns are defined as follows:

$$AR_{i,t} = R_{i,t} - \left[\alpha_i + \beta_i R_{m,t} \right]$$

where $R_{i,t}$ and $R_{m,t}$ denote the return on stock i and the market, respectively, on day t. The parameters α_i and β_i are the intercept and slope estimate, respectively, obtained from the market-model regression. The estimation window for this regression is based on the 255 trading days preceding day -41. The CRSP value-weighted performance index, which is a broad index, is used as the proxy for the market portfolio.

We measure the average cross-sectional cumulative abnormal returns as follows:

$$CAR_{\tau,T} = \sum_{t=\tau}^{T} \left[\frac{1}{n} \sum_{i=1}^{n} AR_{i,t} \right]$$

where τ is the first day of the event window (e.g. day -10), T is the last day of the window (e.g. day +10) and n is the number of acquisitions in the sample.

2.4. Bidder, bid and target characteristics

The variables used in this paper include bidder characteristics, bid characteristics and target characteristics. The bidder characteristics include leverage and asset tangibility, the acquirer's value (measured by the ratio of the book value of equity to its market value; Tobin's Q; and the price-earnings ratio)[3] and corporate governance quality (the Gompers et al. 2013 CG index, their CG dictatorship index, and the Bebchuk et al. 2009 entrenchment index).[4] The bid characteristics include the form of payment for the target shareholders (cash, stock or other payment),[5] analysts' revisions as a response to the acquisition announcement (the median, the mean and a dummy indicating whether the number of analysts making an upward revision exceeds the number of analysts making a downward revision) and the industry announcement effect of the acquisition. Finally, the target characteristics include industry closeness between target and acquirer, leverage and the target CG index (Gompers et al. 2003). The definitions for all the variables (as well as their variants) used in this study are reported in Table 4.

[Insert Table 4 about here]

3. Empirical results

First, based on the signs of the CARs and abnormal accounting performance (measured by the difference between the average ratio of non-industry adjusted (industry adjusted) operating cash flow to sales and the equivalent average for the three years preceding the announcement year), we categorize each acquisition according to the following four types. These types are *Type I* (positive abnormal stock returns and as well as positive abnormal accounting performance), *Type II* (positive abnormal stock returns and negative abnormal accounting performance), *Type III*

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[3] These include the following variants: logarithmic form and market adjusted and industry adjusted. See Table 4 for further details.

[4] A high value for each of these three indices signifies weak corporate governance whereas a low value signifies strong corporate governance. See Table 4 for further details.

[5] These are in the form of percentages as well as in the form of dummy variables indicating whether a majority of the acquisition payment is in cash, stock, and of another type, respectively. See Table 4 for further details.

(negative abnormal stock returns and positive abnormal accounting performance) and *Type IV* acquisitions (negative abnormal returns as well as negative accounting performance). The percentage of Type I acquisitions is for the industry-matched portfolio 61.42% and for the non-industry matched portfolio 61.49%. The equivalent percentages for the Type II acquisitions are 6.50% and 6.43%, for the Type III acquisitions 19.39% and 20.17% and for the Type IV acquisitions 12.69% and 11.91%, respectively. Second, via a univariate analysis we determine whether each of the four types of acquisitions has significantly different bidder, bid and target characteristics.

Table 5 focuses on the non-industry adjusted operating cash flow when measuring accounting performance whereas Table 6 focuses on industry adjusted operating cash flow. In detail, in Table 5 the accounting performance of each bidder is adjusted by its industry-matched portfolio performance. The industry-matched portfolio consists of all the firms with a *different* two-digit SIC code than the acquirer, but of a similar size and pre-event performance. Accounting performance is measured as the difference between the bidder's average accounting performance across the three years following the year of the announcement and the average accounting performance across the three years preceding that year minus the corresponding difference for the matched portfolio. In other words, accounting performance measures the possible improvement in performance from the three-year period before the acquisition to the three-year period after the acquisition, adjusting for the equivalent improvement in performance for the industry-matched portfolio. In contrast, in Table 6 the non-industry-matched portfolio consists of all the firms with a *different* two-digit SIC code than that of the acquirer, but of a similar size (same quintile of book value of total assets for the last available year before the merger announcement as the acquirer) and pre-event performance (same quintile of operating cash flow ratio (return on assets) for the last available year before the merger announcement as the acquirer).

Table 5 reports the descriptive statistics for the four types of acquisitions as well as the whole sample based on the CARs measured over the [-2;+2] window. The asterisks in the table indicate whether there are significant differences in means (medians) between the bidders of a particular type of performance outcome and all the remaining bidders. The table shows that Type I acquisitions are paid for mainly by cash as the average and median percentages of cash payment are 61% and 100%, respectively. Both percentages are significantly higher, at the 1% level, than the mean and median of all the other acquirers. In line with this observation, the average percentage of stock payment and the proportion of acquisitions paid for mainly by stock are significantly lower than the equivalent figures for the whole sample. Further, the number of analysts revising the earnings forecasts upwards for the year following the acquisition announcement significantly exceeds the number of analysts making a revision in the opposite direction at the 1% level (Analysts Revision dummy). Table 6 confirms these patterns when the peer group is the industry-matched portfolio.

[Insert Table 5 about here]

[Insert Table 6 about here]

Type II acquisitions are the first type characterized by a difference in signs between the abnormal stock return (which is positive) and the abnormal accounting performance (which is negative). Similar to Type I acquisitions, Type II acquisitions are more likely to be paid for by cash rather than stock. However contrary to Type I acquisitions, Type II acquisitions tend have significantly lower valuations when compared to all other types of acquirers. This pattern is particularly pronounced when accounting performance is adjusted by the accounting performance of the industry portfolio (see Table 6). There is also some evidence from Table 5 that Type II acquirers have significantly better corporate governance – as measured by the Gompers et al. (2003) index

(the higher the index value, the higher is the number of restrictions to shareholder rights) and the Bebchuk et al. (2009) entrenchment index (again, the higher the index value, the higher is the number of restrictions to shareholder rights) – when compared to all the other acquirers.

Type III acquisitions have negative abnormal stock returns, but positive abnormal accounting performance. In contrast to the two previous types of acquisitions, Type III acquisitions are less likely paid for by cash and more likely paid for by stock. In line with this choice of method of payment, the acquirers behind such acquisitions have significantly greater valuations than the acquirers behind the three other types. This is the case across the various valuation ratios and in particular when acquisitions are categorised according to the industry-adjusted accounting performance (see Table 6). Most of the various valuation ratios have at least one of the two statistics – the average and/or median – which is significantly different from the equivalent statistic of the remaining three types of acquisitions at the 5% level. There is also some weak evidence, via the mean Dictatorship index (based on the Gompers et al. (2003) index and taking only the value of the index if it is at least 14) and 0 otherwise) , that Type III acquirers have better corporate governance.

Finally, Type IV acquisitions also use significantly less cash payment and more stock payment at the 5% level (or better) when the industry-matched portfolio results in Table 5 are considered. This confirmed, however less significant, when the non-industry-matched portfolio results in Table 6 are considered. Type IV acquisitions also have significantly lower bidder valuations (e.g. Tobin's Q) when the categorisation of acquisition types is based on the industry-adjusted accounting performance (see Table 6). There is also some evidence (however, only at the 10% level of significance) from Table 6 – as reflected by the greater mean value for the Dictatorship index – that acquirers behind Type IV acquisitions have weaker corporate governance.

Interestingly, Table 5 also suggests (however, only at the 10% level of significance) that analysts are more likely to revise their forecasts downwards once the acquisition has been announced.

We have checked the robustness of our results using various other window lengths. The results based on the CARs for longer windows such as [-10;+10] largely confirm the above results for the [-2;+2] window.[6] Furthermore, we recalculate the CARs using market-adjusted returns rather than the returns from the market model. Market adjustment has two advantages, both of which are related to the fact that an estimation window prior to the event window is not required. The first advantage is that there is no potential contamination of the estimation window such as via the occurrence of other acquisition announcements. The second advantage is that the potential problem of infrequent or thin trading during the estimation window, and the resulting bias in the estimated beta, are no longer an issue. However, the results from the index adjustment are very similar to those obtained from using the market model adjustment and they are not reported in tabular form.

4. The link between stock returns and accounting performance for bidders in M&As

This section provides possible theoretical reasons for the four combinations of positive or negative abnormal stock returns and abnormal accounting performance. The first type of acquisition is characterised by a greater use of cash as a means of payment, positive analyst revisions and some evidence of better corporate governance. Also bearing in mind that there is both positive abnormal stock performance and abnormal accounting performance, this type of acquisition fits well with the classical textbook motive (see e.g. Grinblatt and Titman (2002)) behind acquisitions, i.e. the desire to create shareholder value via the exploitation of synergies (economies of scale or scope). This type of acquisition results in a significant improvement in the

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[6] The results for the [-10;+10] window are available from the authors upon request.

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combined firm's accounting performance as well as positive abnormal stock returns. Brous and Kini (1993) and Sudarsanam et al. (2002) argue that earnings forecasts and their revision shortly after the takeover announcement provide information on the increase in the bidder's value due to the acquisition. Our empirical analysis shows evidence of such positive revision of earnings forecasts in the month following the acquisition for bidders in Type I acquisitions, reflecting the creation of future synergies.

Finding possible motives for Type II acquisitions is trickier as these acquisitions are characterised by positive abnormal stock returns, but negative abnormal accounting performance. Nevertheless, Fridolfsson and Stennek (2005) provide a possible theoretical justification for Type II acquisitions. They argue that an unprofitable acquisition (as measured by the merged firm's accounting performance) may be motivated by the fact that it is better for the firm to merge with another firm and thereby preempt one of its rivals merging with that firm if there are strong negative externalities to the industry from a merger.[7] This would then explain why the share price of the firm increases despite the merger being unprofitable as measured by its accounting performance. Indeed, given the negative externalities from the merger, it is best to be part of a merger (i.e. to be an insider) rather than to be affected by a rival's merger (i.e. to be an outsider). The pre-merger stock price of the firm would then reflect the possibility that the firm may end up as an outsider whereas the increase in the stock price at the merger announcement could be explained by the fact that the alternative to an unprofitable merger would be even worse. Still, we do not observe a negative industry announcement effect to Type II acquisitions. Indeed, such a negative announcement returns would reflect the negative externalities of the acquisition.

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[7] Fridolfsson and Stennek (2005) provide two examples of mergers driven by the motive of preemption. The first example is Northwestern's acquisition of a 51% voting stake in Continental. Northwestern consented not to vote for its stock for six years and not to intervene in the management of Continental. However, crucially, it kept the right to veto mergers of Continental with other airlines. The second example is Volvo's failed attempt of acquiring Scania. At the time, Volvo stated that its main motive for taking over Scania was to prevent others from doing so.

Nevertheless, the fact that Type II acquisitions have significantly lower valuation ratios – except when these are industry adjusted – fits in well with the preemption motive. Indeed, on the whole these industries are characterised by low firm valuations, reflecting a mature or shrinking market, which in turn makes preemption a rational, shareholder value increasing motive for acquisitions.

Type III acquisitions have a negative abnormal stock return and positive abnormal accounting performance. Our descriptive analysis showed that this type of acquisitions is less likely to be paid for by cash and more likely to be paid for by stock. Importantly, the various valuation ratios suggest that acquirers behind these acquisitions are overvalued. This type of acquisition can be explained by Shleifer and Vishny's (2003) model based on the bidder's overvalued stock.[8] Their model is based on temporary mispricing in the securities market. The model assumes that there are some firms that are overvalued at some point in time. In the long run, however, the market realizes there is mispricing and the firms' stock prices decrease to their fundamental values. The CEOs of the overvalued companies are assumed to be rational and to be aware of the temporary overvaluation. While Shleifer and Vishny do not explicitly make this assumption, we assume that the CEOs act in the interest of the current shareholders by locking in real assets, i.e. by using their overvalued stock to acquire an undervalued (or at least less overvalued) company. The market then realizes that the stock was overvalued, but does not realize the full extent of the overvaluation. As a result, the stock price of the acquirer declines slightly in the short run to return only to the fundamental value of the merged firm in the long run. As Shleifer and Vishny's model does not make any predictions as to the accounting profitability of the merger, it would be possible to observe mergers with negative synergies, but that are in line with the predictions of

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[8] Effectively, Shleifer and Vishny's model combines two separate hypotheses into a single one. These hypotheses are the means of payment hypothesis (Loughran and Vijh 1997) and the profit extrapolation hypothesis (Rau and Vermaelen 1998). The former states that bidders with overvalued equity will pay for acquisitions with stock whereas those with undervalued equity will pay with cash. According to the profit extrapolation hypothesis, the stock market wrongly extrapolates the bidder's past performance of so-called glamour firms, i.e. firms with high market to book value ratios.

their model. However, given our assumption that managers act in the best interests of the shareholders, such mergers are only possible if the acquirer is extremely overvalued which would compensate for the loss of profitability. The question that arises is whether our assumption that the managers act in the interests of their existing shareholders is indeed justified. Although the answer is not unequivocal, Table 6 nevertheless suggests that acquirers undertaking Type III acquisitions have either better corporate governance (when the Dictatorship index is considered) or corporate governance that is not significantly different (including not significantly worse) from that of the other acquirers.

Finally, Type IV acquisitions, which generate both negative abnormal stock returns and abnormal accounting performance, were characterised by the use of stock as a means of payment, low valuation ratios and some evidence of weak corporate governance. All of these characteristics, including the negative performance (independent of how it is measured), suggest that these acquisitions are driven by the agency motive as well as Roll's (1986) hubris argument. According to the agency motive (Jensen and Meckling 1976), if left to their own devices, managers will invest in negative net present value (NPV) projects (such as value-destroying acquisitions) in order to increase their remuneration and status. According to Roll's thesis, managers simply make mistakes when valuing the target in an acquisition. Both arguments explain the combination of negative abnormal stock returns and negative abnormal accounting performance.[9] [10]

[9] While some studies such as Berkovitch and Narayanan (1993) and Goergen and Renneboog (2004) clearly distinguish between the agency motive and the hubris motive, this paper does not so. Indeed, the focus of this paper is different. Rather than focusing on the link between total gains and target shareholder gains (which is different depending on which of the two motives that applies), the focus here is on the link between stock performance and accounting profits (which is the same for either motive).

[10] As a robustness check, we categorize the acquisitions based on the 3-year buy and hold returns (BHARs) starting with the announcement date of the deal. Except for some of the corporate governance indices, the significant differences between the four types are very similar to those obtained from the descriptives based on the short-term CARs. In terms of the corporate governance indices, Type I acquisitions now have significantly worse corporate

5. Conclusion

Studies investigating the wealth effects accruing to the shareholders of acquiring firms have used two different approaches to measure such wealth effects. One such approach consists of performing an event study on the short-term announcement effects to acquisitions or their long-term effects. Studies that have adopted the event study approach typically find that the short-term effects are either insignificant or significantly negative whereas the long-term effects tend to be negative and significant. However, there is granularity with at least one short-term study finding significantly positive announcement returns and another long-term study finding insignificant cumulative abnormal returns. The other approach of measuring the wealth effects of acquisitions to the acquiring shareholders consists of studying abnormal accounting performance following the acquisition. While the studies finding a significant improvement in accounting performance post-acquisition outnumber the studies finding other performance outcomes, there is granularity – similar to what is observed for the case of the event studies – with at least one study finding a deterioration in accounting performance and another one finding no change in performance.

This paper uses both approaches, the event study methodology and the measurement of abnormal accounting performance. It finds great variety in terms of performance outcomes as reflected by the different combinations of positive or negative cumulative abnormal returns (CARs) and positive or negative abnormal accounting performance. In detail, we distinguish between Type I (positive CARs and positive abnormal accounting performance), Type II (positive CARs and

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governance (as measured by the entrenchment index) whereas Type IV acquisitions have significantly better corporate governance. In contrast, Table 6 suggests the opposite with Type IV acquisitions having significantly worse corporate governance. The reversal of signs in terms of the corporate governance indices is somewhat difficult to interpret. Kothari and Warner (2007) review the econometrics of event studies. They conclude that statistical inference from short-term event studies is highly reliable. In contrast, long-term event studies suffer from two major shortcomings. First, the statistical tests suffer from a lack of power, i.e. the null hypothesis of there being no abnormal returns may not be rejected even when there are seemingly large abnormal returns. Second, events are likely to be accompanied by increases in the variance of stock returns, which is likely to result in misspecifications. In turn, this would result in the null being rejected more often than it should be.

negative abnormal accounting performance), Type III (negative CARs and positive abnormal accounting performance) and Type IV (negative CARs and abnormal accounting performance) acquisitions.

Based on a descriptive analysis of a wide range of bidder, bid and target characteristics for a sample of more than 4,500 US acquisitions during 1989 and 2008, we find evidence that Type I acquisitions are motivated by the exploitation of synergies, whereas Type II acquisitions are motivated by preemption (Fridolfsson and Stennek (2005)), Type III acquisitions by the overvaluation of the bidder's stock and market timing (Shleifer and Vishny (2003)) and Type IV acquisitions by bad corporate governance, respectively. This paper has important implications for studies investigating the gains from acquisitions accruing to bidders. Indeed, it suggests that it is crucial to take into account the motive behind each acquisition when measuring the wealth gains for the bidders. In particular, adjusting for the motives behind an acquisition may explain the sometimes contradictory conclusions as to its wealth effects suggested by the event study approach and the abnormal accounting performance approach.

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Table 1: Summary of previous event studies on the wealth effects of M&As

Panel A: Short run event studies

Study	Sample Size	Sample Period	Event window	Acquirer CARs
Asquith et al. (1987)	343	1973 − 83	[−1;±0]	−0.85%**
Varaiya & Ferris (1987)	96	1974 − 83	[−1;±0]	−2.15%**
Bradley et al. (1988)	236	1963−84	[−5;+5]	+1%**
Lang et al. (1989)	87	1968 − 86	[−5;+5]	+0.00%
Servaes (1991)	704	1972−87	[−1;close]	−1.07%**
Byrd & Hickman (1992)	128	1980 − 87	[−1;±0]	−1.2%**
Healy et al. (1992)	50	1979 − 84	[−5;+5]	−2.20%
Kaplan & Weisbach (1992)	209	1971 − 82	[−5;+5]	−1.49%**
Smith & Kim (1994)	177	1980 − 86	[−5;+5]	+0.50%
			[−1;±0]	−0.23%
Mulherin & Boone (2000)	281	1990 − 99	[−1;+1]	−0.37%
Andrade et al. (2001)	3,688	1973 − 98	[−1;+1]	−0.70%
			[−20; close]	−3.80%

Panel B: Long run event studies (Long term returns to acquirers)

Study	Sample Size	Sample Period	Event window (months, unless otherwise stated)	CARs (mergers)	CARs (tender offers)
Loughran and Vijh (1997)	534	1970 − 89	[1;1250 days]	−14.2%**	+61.3%**
Rau and Vermaelen (1998)	4,316	1980 − 91	[0;36]	−4%**	+9%**
Mitchell and Stafford (2000)	2,068	1961 − 1993	[0;36]	−1%	–
Andrade et al. (2001)	2,068	1961 − 1993	[0;36]	-5.0%**	–

This table shows the event studies that estimate shareholder wealth effects of mergers in the short and long run. Panel A shows the average cumulative abnormal returns (CARs) for the shareholders of the acquirer from the short-run event studies. Panel B exhibits the CARs to acquirers found by the long-run event studies. ** and * stand for significance at the 5% level or better and significance at the 10% level, respectively.

Table 2: Summary of previous accounting performance studies on the wealth effects of M&As

Study	Dataset and performance measure used	Results	Time of measurement
Ravenscraft & Scherer (1989)	471 companies with and without acquisition activity between 1950 and 1977 (not 1970), operating income over total assets	Acquisition activity significantly reduces profit, but level of reduction depends on accounting method and acquisition type.	1977, 1975-1977
Healy et al. (1992)	50 largest US mergers between 1979 and 1984, industry-adjusted operating cash flows to total assets	+2.8%**	Median annual performance for years +1 to +5
Dickerson et al. (1997)	613 transactions between 1948 and 1977, return on assets	−2.00%***	Year after the acquisition
Ghosh (2001)	315 transactions between 1981 and 1995, industry-adjusted cash flows to total assets	+0.27%	Median change in performance between 3-year pre-merger performance and 3-year post-merger performance
Andrade et al. (2001)	Roughly 2,000 transactions between 1973 and 1998, industry-adjusted operating cash flows to sales	+3.15%**	Annual performance in year t+2
Linn & Switzer (2001)	413 acquisitions between 1967 and 1987, industry-adjusted operating cash flows to the market value of equity and book value of debt	+1.81%***	Median change in performance between 5-year pre-merger performance and 5-year post-merger performance

Table 2 (continued): Summary of previous accounting performance studies on the wealth effects of M&As

Heron and Lie (2002)	859 completed M&As between January 1985 and December 1997, operating income scaled by sales	"Regardless of the interval over which the change in performance-adjusted operating income is measured, the differences are not statistically significant at the 0.10 level." (p. 147)	
Ramaswamy & Waegelein (2003)	162 transactions between. 1975 and 1990, the ratio of industry-adjusted operating cash flows to total assets	+0.127**	Difference in the median industry-adjusted cash flow return on market value of assets of the post-merger five years and the corresponding pre-merger five years.

This table shows the studies that estimate shareholder wealth effects of mergers via accounting performance. We show the average abnormal cash flow returns of the combined firms using the particular cash flow measure. ** and * stand for significance at the 5% level or better and significance at the 10% level, respectively.

Table 3: Pre- and post-merger cash flow returns

Year relative to transaction	Cash flow return		Abnormal cash flow return (industry matched portfolio)		Abnormal cash flow return (non-industry matched portfolio)	
	Mean	Median	Mean	Median	Mean	Median
-3	48.22%***	44.68%***	-0.05%	3.11	2.26%***	2.64%***
-2	48.61%***	45.92%***	-1.67%***	1.38**	0.47%	1.09%
-1	48.78%***	46.36%***	-3.51%***	-1.90***	-0.86%*	-1.13%*
1	50.68%***	46.37%***	-10.11%***	-7.26***	-5.63%***	-7.76%***
2	51.64%***	46.46%***	-9.10%***	-6.61***	-4.79%***	-5.96%***
3	50.84%***	47.80%***	-8.71%***	-5.36***	-4.66%***	-5.47 %***

This table presents the acquirer's mean and median operating cash flow returns for the whole sample. Cash flow is defined as sales (CRSP Item 12) minus the cost of goods sold (Item 41) minus selling and administrative expenses (Item 189) plus depreciation and goodwill (Item 196). Cash flow is scaled by sales measured at the end of the fiscal year preceding the merger to form the cash flow return. The table displays the mean and median values for each of the three years before and after the merger. Columns two and three show the acquirer's raw cash flow return. Columns four to seven display the abnormal cash flow returns of the merging firms compared to the industry matched portfolio and the non-industry matched portfolio, respectively. ***, ** and * stand for statistical significance at the 1%, 5% and 10% level, respectively, for the two-tailed test that the return is different from zero.

Table 4: Definition of the variables

Variable	Description
Bidder characteristics	
Leverage	The acquirer's book value of long-term debt (Item 9) over the book value of equity (Item 60) at the end of the financial year before the announcement of the acquisition.
Intangible Assets	The book value of intangible assets (Item 33) at the end of the financial year before the announcement of the acquisition divided by total assets (Item 6) for the same period.
BtM	The book value of equity (Item 60) at the end of the financial year before the announcement of the acquisition divided by the market value of equity (Item 25 times Item 199) of the acquirer in the month preceding the announcement.
BtM-market-Adjusted	The BtM of the acquirer minus the median Tobin's Q of all stocks in the CRSP universe for the same period
Ln(BtM)	The natural logarithm of the acquirer's BtM as defined above
Ln(BtM market-adjusted)	The natural logarithm of the acquirer's BtM minus the natural logarithm of the median BtM of all stocks in the CRSP universe for the same period.
Tobin's Q	The ratio of the acquirer's market value of assets to the book value of total assets (Item 6) of the acquirer in the financial year before the announcement of the acquisition. As in Malmendier and Tate (2007), market value of assets is defined as total assets (Item 6) plus market value of equity (Item 25 times Item 199) minus book value of equity (Item 60).
Ln(Tobin's Q)	The natural logarithm of the acquirer's Tobin's Q as defined above
Q-industry-adjusted	The acquirer's Tobin's Q minus the median Tobin's Q of all stocks with the same two-digit SIC code for the same period
Q-market-adjusted	The acquirer's Tobin's Q minus the median Tobin's Q of all stocks in the CRSP universe for the same period
Ln(Q-industry-adjusted)	The natural logarithm of the acquirer's Tobin's Q minus the natural logarithm of the median Q of all stocks with the same two-digit SIC code for the same period.
Ln(Q-market-adjusted)	The natural logarithm of the acquirer's Tobin's Q minus the natural logarithm of the median Q of all stocks in the CRSP universe for the same period.
PE	The price-earnings ratio of the acquirer at the end of the month preceding the announcement of the acquisition.
Multiple Acquisitions	A dummy variable that takes on the value of one if the acquirer is involved in more than one acquisition over the sample period.
CG Index	This is the Gompers et al. (2003) index which measures shareholder restrictions in the US. The index is incremented by 1 for each provision that restricts shareholder rights (i.e. increases managerial power). The index can potentially range from 1 to 24
CG Dictatorship Index	The Dictatorship Index is based on the Gompers et al. (2003) index. The authors call the portfolio of companies with an index value of at least 14 the "dictatorship portfolio". The CG Dictatorship Index is equal to the value for the CG index if it is at least 14 and zero otherwise
Entrenchment Index	The Entrenchment Index is based on the Bebchuk et al. (2009) entrenchment index. The index is incremented by 1 for each of 4 possible provisions that reduce shareholder voting power and 2 provisions that prevent hostile takeovers. The entrenchment index is measured for all firms without dual-class stock followed by the Investor Responsibility Research Center (IRRC)
Bid characteristics	
% Cash Payment	The share of cash expressed as a percentage of the total payment for the acquisition
% Other Payment	The share of other payment methods (Percentage of consideration paid in other then cash or stock: Total value minus value paid in cash and stock divided by total value; consideration sought: All types of consideration sought by the acquirer: common or ordinary shares (for public targets), options, convertible preferred shares, assets, stock (for private targets)) expressed as a percentage of the total payment for the acquisition

Table 4 (continued): Definition of the variables

% Stock Payment	The share of stock expressed as a percentage of the total acquisition payment for the acquisition
Majority Cash Payment	A dummy variable that takes on the value of one if at least 50.1 % of the acquisition payment is made by cash and is set to zero otherwise
Majority Other Payment	A dummy variable that takes on the value of one if at least 50.1 % of the acquisition payment is made by payment forms other than stock and cash and is set to zero otherwise
Majority Stock Payment	A dummy variable that takes on the value of one if at least 50.1 % of the acquisition payment is made by stock and is set to zero otherwise
Analysts' Revision Dummy	This a dummy variable set to one if the number of analysts making an upward revision in the quarter following the announcement of the acquisition is larger than the number of analysts making a downward revision. All forecasts are for the acquiring firm in the financial year following the year of the acquisition announcement
Analysts' Revision Median	The median of the ratio of (IBES Earnings Consensus Mean Post-Acquisition / closing price of the first trading day in the month of the forecast – IBES Consensus Mean Pre/ closing price of the first trading day in the month of the forecast) to IBES Consensus Mean Pre-Acquisition / closing price of the first trading day in the month of the forecast. The pre-acquisition period is defined as the quarter preceding the quarter with the announcement day and the post-acquisition period is quarter following the announcement. All forecasts are for the acquiring firm in the financial year following the year of the acquisition announcement
Analysts' Revision Mean	The mean of the ratio of (IBES Earnings Consensus Mean Post-Acquisition / closing price of the first trading day in the month of the forecast – IBES Consensus Mean Pre / closing price of the first trading day in the month of the forecast) to IBES Consensus Mean Pre-Acquisition / closing price of the first trading day in the month of the forecast. The pre- and post-acquisition periods are as defined above. All forecasts are for the acquiring firm in the financial year following the year of the acquisition announcement
Industry CARs [−X;+X]	The median abnormal returns of the acquirer's industry over the [−X;+X] event window centred on the announcement day of the acquisition. The industry classification is based on the two-digit SIC codes
Target characteristics	
Industry Closeness	Industry closeness is a categorical variable which measures how close the acquirer's and target's industries are. The variable equals zero if both industries have a different first digit for their SIC code, one if they both have the same first digit for their SIC code, three if the two first digits of their SIC codes are the same and four if the four-digit SIC codes are identical.
Leverage of Target	The target's book value of long-term debt (Item 9) over the book value of equity (Item 60) at the end of the financial year before the announcement of the acquisition.
CG Target	This is the Gompers et al. (2003) index for the target firms which measures shareholder–rights restrictions. The index is incremented by 1 for each provision that restricts shareholder rights (i.e. increases managerial power). The index can potentially range from 1 to 24

This table contains the definitions of all the variables used in this study, except for the abnormal accounting performance and the abnormal stock returns which are defined in Section 2.2 and Section 2.3, respectively. Financial data are obtained from COMPUSTAT, data on analyst forecasts are from IBES and stock price data are from CRSP.

Table 5: Descriptive statistics – Acquisition type classification based on CARs [-2;+2] (non-industry-matched portfolio)

	Type I		Type II		Type III		Type IV		All	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
% Cash Payment	60.59***	100.00***	62.99***	93.01***	49.63***	47.40***	51.11*	50.68*	55.61	74.8
% Other Payment	7.72	0.00	8.29	0.00	7.67	0.00	7.74	0.00	7.91	0.00
% Stock Payment	31.68***	0.00***	21.11**	0.00**	42.69***	20.11***	41.15**	8.70*	36.46	0.00
Majority Cash Payment	0. 61***	1.00***	0.64***	1.00***	0.49***	0.00***	0.50**	1.00**	55.61	1.00
Majority Other Payment	0.06	0.00	0.06	0.00	0.05	0.00	0.04	0.00	0.05	0.00
Majority Stock Payment	0.30***	0.00	0.28***	0.00	0.43***	0.00	0.43**	0.00	0.36	0.00
Tobin's Q	2. 91	1.83	3.04	1.77	3.10	2.04	2.80	1.90	2.98	1.91
Ln (Tobin's Q)	0.79	0.60	0.76	0.58	0.85*	0.71*	0.80	0.64	0.80	0.65
Q-Market Adjusted	1.56	0.47	1.69	0.42	1.76	0.66*	1.46	0.60	1.63	0.56
Q-Industry Adjusted	0. 57	-0.21	0.68	-0.17	0.63	-0.13	0.28	-0.13	0.56	-0.13
Ln(Q-Market Adjusted)	0.49	0.29	0.47	0.27	0.55*	0.39*	0.52	0.40	0.51	0.35
Ln(Q-Industry Adjusted)	0.99*	0.77*	0.90	0.75	0.89	0.72	0.88	0.70	0.92	0.76
BtM	0.37	0.34	0.45***	0.40***	0.36**	0.30**	0.37	0.33	0.38	0.36
Ln (BtM)	-1.23	-1.07	-1.05***	-0.96***	-1.29***	-1.21***	-1.18	-1.09	-1.21	-1.12
BtM-Market Adjusted	-0.09	-0.02	-0.03**	-0.07**	-0.12***	-0.18***	-0.10	-0.12	-0.09	-0.14
Ln(BtM-Market Adjusted)	-0.46	-0.28	-0.28***	-0.17***	-0.53***	-0.45***	-0.41	-0.29	-0.44	-0.34
PE	7.41	20.82	19.73	18.82	17.83	21.33	36.89*	19.57	17.96	20.35
Analysts' Revision Mean	-0.01	0.00	-0.01	0.00	0.12	0.00	-0.20*	0.00	0.00	0.00
Analysts' Revision Median	-0.01	0.00	-0.01	0.00	0.14	0.00	-0.23*	0.00	0.00	0.00
Analysts' Revision Dummy	0.40***	0.00	0.35	0.00	0.33	0.00	0.31*	0.00	0.35	0.00
Industry Closeness	1.81	2.00	1.87	2.00	2.08	2.00	2.06	2.00	1.89	2.00
CG Index Acq	9.14	9.00	8.56**	8.00**	8.99	9.00	8.77	9.00	8.92	9.00
Dictatorship Index	0.05	0.00	0.06	0.00	0.04	0.00	0.07	0.00	0.05	0.00
Entrenchment Index	2.10*	2.00	1.86**	2.00	2.04	2.00	2.03	2.00	2.03	2.00
Industry CARs[-2; +2]	-0.03	-0.03	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
CG Index Target	8.69	9.00	8.50	8.00	9.18	9.00	9.13	9.00	9.00	9.00
Multiple Bids	0.69	1.00	0.71	1.00	0.73	1.00	0.74	1.00	0.72	1.00
Leverage Acq	0.16	0.43	0.42	0.31	0.42	0.35	0.48	0.27	0.34	0.34
Intangible Assets	0.18	0.13	0.18	0.13	0.18	0.11	0.16	0.10	0.17	0.12

The table reports descriptive statistics for the four different types. An acquisition is of Type I if both its CAR [-2;+2] and non-industry adjusted accounting performance are positive, of Type II if its CAR is positive and its non-industry adjusted accounting performance is negative, of Type III if its CAR is negative and its non-industry adjusted accounting performance is positive, and of Type IV if its CAR and non-industry adjusted accounting performance are both negative. Acquirers with negative BtM ratios and those with negative PE ratios are excluded. Accounting performance is measured as the difference between the average accounting performance across the three years following the year of the announcement and the average accounting performance across the three years preceding that year minus the corresponding difference for the matched portfolio. The variables are defined in Table 4. We carry out a simple t-test (for the mean) and a Wilcoxon signed rank test (for the median) for each variable. For the categorical variables "majority cash payment", "majority other payment" and "majority stock payment", the test statistic is a Pearson chi-square test which assumes a binomial distribution. The null hypothesis states that the mean (median) of the respective type is equal to the mean (median) for the three remaining types. ***, ** and * stand for statistical significance at the 1%, 5% and 10% level, respectively.

Table 6: Descriptive statistics – Acquisition type classification based on CARs [-2;+2] (industry-matched portfolio)

	Type I		Type II		Type III		Type IV		All	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median
% Cash Payment	59.16**	85.17**	65.29***	97.89***	49.74***	47.55***	50.88**	50.68**	55.61	74.8
% Other Payment	7.75	0.00	8.19	0.00	7.39	0.00	8.28	0.00	7.91	0.00
% Stock Payment	33.10**	0.00**	26.51***	0.00***	42.85***	16.00**	40.82***	16.35**	36.46	0.00
Majority Cash Payment	0.60**	1.00**	0.66***	1.00***	0.49***	0.59***	0.50***	1.00***	55.61	1.00
Majority Other Payment	0.05	0.00	0.06	0.00	0.05	0.00	0.04	0.00	0.05	0.00
Majority Stock Payment	0.33**	0.00	0.25**	0.00	0.43**	0.00	0.41**	0.00	0.36	0.00
Tobin's Q	3.16	1.99	2.60**	1.68***	3.20*	2.08	2.63**	1.73*	2.98	1.91
Ln (Tobin's Q)	0.83	0.69	0.70***	0.52***	0.87	0.72	0.74*	0.53*	0.80	0.65
Q-Market Adjusted	1.81	0.59	1.25**	0.32***	1.86*	0.73**	1.27*	0.43*	1.63	0.56
Q-Industry Adjusted	0.77*	-0.09	0.32	-0.16	0.66	-0.17	0.22*	-0.11	0.56	-0.13
Ln(Q-Market Adjusted)	0.53	0.36	0.40***	0.22***	0.59***	0.43***	0.45*	0.29	0.51	0.35
Ln(Q-Industry Adjusted)	0.98	0.80	0.93	0.83	0.87	0.69**	0.93	0.82	0.92	0.76
BtM	0.36	0.30**	0.45***	0.41***	0.34**	0.28***	0.38**	0.36**	0.38	0.32
Ln (BtM)	-1.27**	-1.17**	-0.99***	-0.88***	-1.32***	-1.24***	-1.12**	-1.00**	-1.21	-1.12
BtM-Market Adjusted	-0.10	-0.15*	-0.01***	-0.06***	-0.12	-0.18**	-0.09	-0.10	-0.09	-0.14
Ln(BtM-Market Adjusted)	-0.51**	-0.40**	-0.22***	-0.10***	-0.56**	-0.48***	-0.36**	-0.23**	-0.44	-0.34
PE	19.19	21.30*	0.10***	17.81***	26.44	21.97*	20.05	18.17*	17.96	20.35
Analysts' Revision Mean	-0.02	0.00	0.00	0.00	0.10	0.00	-0.16	0.00	0.00	0.00
Analysts' Revision Median	-0.01	0.00	0.03	0.00	0.12	0.00	-0.19	0.00	0.00	0.00
Analysts' Revision Dummy	0.40***	0.00	0.35	0.00	0.34	0.00	0.31*	0.00	0.35	0.00
Industry Closeness	1.83	2.00	1.83	2.00	1.94	2.00	1.95	2.00	1.89	2.00
CG Index Acq	8.90	9.00	8.84	0.00	8.97	9.00	8.80	9.00	8.92	9.00
Dictatorship Index	0.05	0.00	0.07	0.00	0.04**	0.00	0.08*	0.00	0.05	0.00
Entrenchment Index	2.04	2.00	1.97	2.00	2.03	2.00	2.05	2.00	2.03	2.00
Industry CARs[-2; +2]	-0.03	-0.03	-0.02	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
CG Index Target	8.55	8.00	8.73	8.00	9.31	9.00	8.93	9.00	9.00	9.00
Multiple Bids	0.70	1.00	0.70	1.00	0.75	1.00	0.69	1.00	0.72	1.00
Leverage Acq	0.55	0.36	0.30	0.37	0.56	0.44	0.20	0.32	0.34	0.34
Intangible Assets	0.18	0.13	0.17	0.12	0.17	0.12	0.16	0.09	0.17	0.12

The table reports descriptive statistics for the four different types. An acquisition is of Type I if both its CAR [-2;+2] and non-industry adjusted accounting performance are positive, of Type II if its CAR is positive and its non-industry adjusted accounting performance is negative, of Type III if its CAR is negative and its non-industry adjusted accounting performance is positive, and of Type IV if its CAR and non-industry adjusted accounting performance are both negative. Acquirers with negative BtM ratios and those with negative PE ratios are excluded. Accounting performance is measured as the difference between the average accounting performance across the three years following the year of the announcement and the average accounting performance across the three years preceding that year minus the corresponding difference for the matched portfolio. The variables are defined in Table 4. We carry out a simple t-test (for the mean) and a Wilcoxon signed rank test (for the median) for each variable. For the categorical variables "majority cash payment", "majority other payment" and "majority stock payment", the test statistic is a Pearson chi-square test which assumes a binomial distribution. The null hypothesis states that the mean (median) of the respective type is equal to the mean (median) for three remaining types. ***, ** and * stand for statistical significance at the 1%, 5% and 10% level, respectively.