# What are the Causes and Effects of M&As? The UK Evidence

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This paper examines the link between the causes and effects of mergers and acquisitions. By using a sample of UK acquisitions, which have the distinct characteristics of limited use of stock as means of payment and dominance of private acquisitions, the evidence shows that, on average, there is a substantial price run-up for acquirers prior to an acquisition announcement followed by a significant drop of bidder's price in the post-event period. This indicates, to an extent, that corporate acquisitions are the effect of good performance rather than the cause. However, the results also reflect that a relatively better acquisition strategy for a firm to create value is by making many small acquisitions rather than a small number of large acquisitions, implying that acquisitions also drive performance. Overall, the evidence found is mixed and suggests that in the UK market, acquisition returns cannot be solely based on the market driven explanation. (JEL: G14, G34)

**Keywords:** mergers & acquisitions, price run-up, method of payment, frequent bidders, long-term wealth effects.

## I. Introduction

The examination of causes and shareholders' wealth effects of mergers and acquisitions is one of the most researched areas in finance. A

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common finding emerging from the empirical literature is that shareholders of target firms experience positive abnormal returns surrounding acquisition announcements. Acquirers, on the other hand, are found to realize negative to zero abnormal returns while the combined entity earns a positive abnormal return around the announcement date.[1] However, a more careful investigation of the M&A decision and the fundamental factors determining the success of a takeover shows that this fact does not seem to be representative of the entire picture. If bidding firms are generally the losers in this battle, then why do they still undertake such corporate decisions? Certainly, there must be some link between bidder gains and merger incentives that have yet to be discovered.

A number of other several key questions arise from this school of thought: Does bidders' pre-takeover performance influence their merger decisions? Is bidders' merger frequency a factor that determines their performance? Furthermore, will the outcome of the "battle" be different if non-public acquisitions are taken into consideration? As Andrade, Mitchell and Stafford (2001) argue: "In an efficient economy, there would be a direct link between causes and effects, and mergers would happen for the right reasons". Very few previous studies have examined these three interrelated issues that affect the performance of bidding firms. The purpose of this study is to fill this gap and offer new insights on what drives bidder returns.

Bradley and Sundaram (2004) found that firms which undertake acquisitions exhibit a substantial stock price run-up prior to the acquisition announcement. When examining the acquiring firms' control portfolio in the US takeover market, they found that this portfolio outperformed the New York Stock Exchange (NYSE) market index by 50%. In other words, their results suggest that these deals were performance driven acquisitions, and this could explain the cause of acquisitions. Their argument was further reinforced by the dominance of stock-financed deals in the US market and the fact that they were associated with a significant price run up in the period prior to the acquisition.

However, another issue that has recently attracted the interest of many researchers is the serial acquisition strategy of firms over time. A

1. For evidence on acquirers' short-run stock returns see, for example, Asquith, Bruner and Mullins (1983), Dennis and McConnell (1986), Bradley, Desai, and Kim (1988) and Franks and Harris (1991). For evidence of combined firm returns see, for example, Bradley, Desai, and Kim (1988) and Andrade, Mitchell, and Stafford (2001).

number of studies have found that there is a significant difference in gains between firms that conduct many small acquisitions versus those that make a small number of large acquisitions (Harding and Rovit (2002)). The typical arguments developed to support this finding include the notion that smaller acquisitions are easier to integrate, they are more likely to involve related businesses, and they are more likely to benefit acquirers as they gain experience from learning by doing. In addition, prior research has shown that smaller acquisitions are less likely to be undertaken for reasons of hubris and empire building (Moeller, Schlingemann and Stulz (2004)), while they are more likely to be capable of exploiting information asymmetries. Finally, they are more likely to be acquired with cash rather than stock. In a nutshell, all these arguments suggest that certain acquisition strategies drive performance.

This paper addresses the question of whether acquirers' pre-takeover performance drives acquisitions, or rather whether it is the particular acquisition strategies adopted which drive bidder's performance. By using an exhaustive UK sample of 6,423 completed acquisitions between 1985 and 2004, the relationship between bidders' pre-event performance and their performance in the long-run post-acquisition period is examined for both non-public and public acquisitions, as well as bidders' acquisition strategies over time controlling for other deal- and firm-specific characteristics such as target listing status, method of payment and relative size of the deal. A unique feature of the UK takeover market is the very thin use of stock in acquisition deals compared to the US deals that are primarily stock financed. This enables us to naturally control, to a great extent, for acquisitions motivated by equity overvaluation, which has been the main explanation provided by recent US studies (Shleifer and Vishny (2003), and Bradley and Sundaram (2004)).

While there is a strand in the literature supporting the idea that a firm's past performance drives acquisitions, an alternative view is that there are good and bad acquisitions depending on the nature and type of the deal. These are not mutually exclusive arguments. It is likely that firms that have performed well in the past are in the best position to acquire other firms, and those that are able to assimilate their acquisitions effectively will continue more easily to do well afterwards. Additionally, previous evidence shows that firms that make many acquisitions exhibit a different behavior than infrequent acquirers (Fuller, Netter and Stegemoller (2002)). This work therefore also

examines the performance of frequent and infrequent acquirers. Most acquisitions made by frequent acquirers are related with acquisitions of non-public targets. An increasing number of studies have shown that there is a significant difference between the acquisition returns of public acquisitions and non-public acquisitions (Chang (1998) and Draper and Paudyal (2006)), as the latter lead to value creation for bidding firms' shareholders. Additionally, the UK market has also the distinct characteristic to be dominated by private deals (approximately 90% of the acquisitions undertaken are to acquire an unlisted firm), and therefore the UK serves as an ideal testing platform to examine the performance of frequent versus infrequent acquirers. Given also that private targets are relatively smaller, and considering that as part of the analysis this work intends to examine how the relative size of the deal affects bidder returns (as well as the performance of frequent acquirers, which are mainly associated with acquisitions of small targets such as private targets), private targets are also included in the analysis in order to have a more spherical view of M&A decisions and reach more fruitful conclusions.

The results indicate that acquirers' losses decrease dramatically when the price run-up is taken into consideration even when non-public target acquisitions are included in the sample, consistent with Bradley and Sundaram (2004). This verifies that performance driven acquisitions are not solely a US phenomenon. In other words, the results suggest that acquisitions are the product of good performance and not the cause, explaining to an extent that the finding of bidders losing in the M&A battle does not truly represent the entire picture. Also, the level of under-performance varies according to the type of acquisition strategy followed, the method of payment and the size of the target relative to the size of the acquirer. In addition, similar to previous studies, evidence is also provided showing that bidders involved in non-pubic target acquisitions yield better performance, while bidders' price run up is significantly larger when stock is used as a method of payment. However, the evidence also indicates that bidders create more value when they acquire a large number of small firms rather than a small number of large firms. This implies that in a takeover market with the distinct characteristic of very few stock deals, acquisition techniques also drive bidder returns, and hence this raises a question mark over Bradley and Sundaram's (2004) conclusion that acquisitions are market driven.

This paper contributes to the M&A literature in several ways.

Firstly, it adds to the debate on whether acquisitions are market driven by doing an experiment in a takeover market where stock method of payment is sparse. Secondly, it offers new insights regarding value creation strategies. Thirdly, it provides evidence of acquirer returns in acquisitions of private targets, for which there is limited evidence in the UK related studies.

This paper is related with the previous work of Shleifer and Vishny (2003), Bradley and Sundaram (2004) and Fuller Netter and Stegemoller (2002). Shleifer and Vishny (2003) suggest that acquisitions are market driven while Bradley and Sundaram (2004) use a US sample of acquisitions and test empirically the hypothesis of whether it is market valuation that drives acquisitions or indeed whether acquisitions drive market performance, concluding to Shleifer and Vishny's (2003) suggestion. This study employs a UK sample of acquisitions, which has distinct characteristics, and investigates the causes and consequences of M&As, finding that UK acquisitions are only partially market driven. Fuller, Netter and Stegemoller (2002) examine frequent acquisitions and acquirer returns. Along a similar line, this paper also uses frequent acquisitions in its analysis and identifies that bidders are better off with conducting many acquisitions of small firms rather than undertaking a small number of deals to acquire large firms, thus ultimately implying that acquisitions can also drive stock price performance.

The rest of the paper is organized as follows. Section II develops the hypotheses. Section III presents the data and methodology used in this study. Section IV presents the results of the empirical analysis and interprets the findings. Section V concludes the paper.

## II. Hypotheses Development

While a large number of previous studies suggest that bidding firms suffer losses from corporate takeover activities, M&As have been one of the most prominent ways by which firms implement their strategies for value creation. There are a number of partial explanations offered to explain the motivation behind M&A deals. For instance, Roll (1986) posits that M&As occur because of the hubris (overconfidence) of managers. Shleifer and Vishny (2003) argue that firms with overvalued stock prices pursue acquisitions using stock as the method of payment to capitalize upon the opportunities emanating out of temporary market inefficiencies. Given this argument, the value destruction from the

acquisition is considered to be less than what the firm would have otherwise experienced, as the market would eventually correct the inefficiency and any resultant overvaluation over time (Bradley and Sundaram (2004)). Draper and Paudyal (2006) suggest that bidders often have empire-building incentives when they engage in merger deals. The firm's run-up is likely to increase the level of managerial discretion and this has been shown to be related with value-decreasing acquisitions (Jensen (2004)). In summary, a run-up in a firm's stock price may enhance managerial overconfidence and discretion or indeed can offer the firm an inflated currency to pursue acquisitions (Bradley and Sundaram (2004)). If this is the case, then it is previous good performance that drives acquisitions. This implies that acquirers should inevitably perform poorly in the period following an acquisition as the market corrects its mistake.

Additionally, it has also been suggested that acquisitions with stock, as the method of payment, should be worse off in the long run. Previous studies (Bradley and Sundaram (2004)) found that bidders using stock as method of payment send out a negative signal to the market that their stock is overvalued (Travlos (1987)). The market then adjusts its expectations regarding the bidder value following this signal, resulting in a stock price decline.[2] From the bidder's point of view, it is more profitable in the short-run to use the overvalued stock as the method of payment when buying an undervalued target or to purchase a relatively less overvalued target with stock. However, once the market absorbs this information, it will automatically discount the bidder's stock price, which will result in losses over time. The above analysis leads to the following two hypotheses:

H1: Bidding firms with superior performance prior to an acquisition (price run-up) should exhibit significantly negative performance in the long-run.

H2: Bidders using stock as method of payment exhibit a more significant price run-up prior to an acquisition. However this should result in worse performance in the long-run than acquisitions financed with cash.

2. For the stock overvaluation in M&As based on Myers and Majluf (1984) hypothesis see, for example Travlos (1987) for the short-run analysis and Loughran and Vijh (1997) for the long-run analysis, respectively.

However, there are a number of studies arguing that there is a difference in value when bidders engage in a small number of large acquisitions as opposed to undertaking many small acquisitions. Harding and Rovit (2004) studied many cases of M&As undertaken by different consulting firms and suggested that frequent acquirers that build skills and experience through the conduction of small deals come out on top. Cools et al. (2004) similarly conclude that highly acquisitive firms outperform those that make few or no acquisitions by 29% during the course of a decade. The UK dataset employed here offers the opportunity to conduct a natural experiment to test this hypothesis, as the vast majority of the acquisitions involve private targets, which are relatively smaller targets. Given the above, the final hypothesis is proposed as:

> H3: Bidders that acquire a large number of small targets should exhibit better long-term performance than those that acquire a small number of large targets.

To sum up, hypotheses 1 and 2 contradict hypothesis 3. If hypotheses 1 and 2 hold, then acquisitions can be considered to be market driven. If hypothesis 3 holds, then stock price performance is driven by acquisitions. However, these are not mutually exclusive hypotheses. While acquisitions might be driven by market performance, an alternative view is that there are good and bad acquisitions, depending on the nature and type of acquisition undertaken. Hence a natural question that arises is the following: Does performance drive acquisitions or acquisition strategies drive performance? In other words, are corporate acquisitions the effect of good performance or the cause? The empirical results in the next sections will focus on answering these questions.

## III. Data and Methodology

### *A. Data Selection*

The sample of acquisitions is drawn from the Securities Data Corporation's (SDC) Mergers and Acquisitions Database, as in Sentis (2009). It includes all completed domestic acquisitions made by publicly listed UK firms for the period January 1985 through December 2004,

excluding financial and utility firms as in Fuller, Netter and Stegemoller (2002).[3] For the purpose of this study, it is required that the bidder purchases at least 50% of the target shares and after the purchase the bidder owns at least 90% of the target. After this initial screening, data was obtained for 8,752 acquisitions undertaken by 2,125 UK firms publicly listed on the London Stock Exchange, as in Powell (2004). Price data was collected from the DataStream database, using the SEDOL code to match them with SDC data. 1,245 deals are excluded from the sample due to the unavailability of SEDOL codes so that there are 7,507 deals remaining. It is also required for acquirers to have at least five days of return data around the acquisition announcement for short-run analysis, and one- and two-year return data for the long-run analysis available from the Thomson Financial Datastream. This leads to an exclusion of 747 observations from the sample, which now rests at 6760 deals. All acquisitions with a transaction value of less than 50,000 pounds were also excluded to avoid noise in the analysis. After this screening process was complete, a final sample of 6,423 UK acquisitions undertaken by 1,367 publicly listed acquirers was generated.

*B. Sample Description*

Tables 1 to 3 summarize the characteristics of the sample. Table 1 shows that 3001 out of 6423 (about 47%) acquisitions were clustered between 1987 to 89 and 1997 to 2000. The number of acquisitions during these periods averaged nearly to 428 per year, compared to an annual average of 321 deals, while the peak year was 1998 with 603 acquisitions. Nearly 89% of the acquisitions involved non-public targets and approximately only 11% involved publicly traded targets. These proportions are roughly constant throughout the decade. Related acquisitions account for about 50% of the sample.[4] Approximately 47% of all acquisitions include cash as the sole medium of exchange, while

3. Financial and utility firms face relatively more stringent regulatory environment. Apparently, they experience a unique return behavior relative to firms operating in other industries. For instance, Aintablian and Roberts (2005) show that acquirers in the Canadian banking sector generate positive abnormal returns at the merger announcement.

4. For the purposes of this research, related acquisitions are defined as acquisitions where the target and acquirer have the same two-digit primary SIC code as identified by SDC.

**TABLE 1. Summary Statistics by Year**

| Year | No. of Deals | % of Deals | No. of Public Targets | % of Public Targets | No. of Non-Public Targets | % of Non-Public Targets | No. of related Deals | % of related Deals |
|---|---|---|---|---|---|---|---|---|
| 1985 | 20 | 0.31% | 5 | 0.71% | 15 | 0.26% | 3 | 0.09% |
| 1986 | 65 | 1.01% | 12 | 1.69% | 53 | 0.93% | 27 | 0.85% |
| 1987 | 191 | 2.97% | 35 | 4.94% | 156 | 2.73% | 77 | 2.42% |
| 1988 | 306 | 4.76% | 48 | 6.77% | 258 | 4.52% | 123 | 3.87% |
| 1989 | 289 | 4.50% | 65 | 9.17% | 224 | 3.92% | 109 | 3.43% |
| 1990 | 231 | 3.60% | 21 | 2.96% | 210 | 3.68% | 90 | 2.83% |
| 1991 | 223 | 3.47% | 38 | 5.36% | 185 | 3.24% | 88 | 2.77% |
| 1992 | 231 | 3.60% | 27 | 3.81% | 204 | 3.57% | 103 | 3.24% |
| 1993 | 245 | 3.81% | 28 | 3.95% | 217 | 3.80% | 104 | 3.27% |
| 1994 | 329 | 5.12% | 44 | 6.21% | 285 | 4.99% | 162 | 5.10% |
| 1995 | 343 | 5.34% | 48 | 6.77% | 295 | 5.16% | 173 | 5.45% |
| 1996 | 358 | 5.57% | 32 | 4.51% | 326 | 5.71% | 156 | 4.91% |
| 1997 | 499 | 7.77% | 46 | 6.49% | 453 | 7.93% | 277 | 8.72% |
| 1998 | 603 | 9.39% | 46 | 6.49% | 557 | 9.75% | 328 | 10.32% |
| 1999 | 542 | 8.44% | 61 | 8.60% | 481 | 8.42% | 285 | 8.97% |
| 2000 | 571 | 8.89% | 48 | 6.77% | 523 | 9.15% | 323 | 10.17% |
| 2001 | 438 | 6.82% | 32 | 4.51% | 406 | 7.11% | 221 | 6.96% |
| 2002 | 344 | 5.36% | 25 | 3.53% | 319 | 5.58% | 182 | 5.73% |
| 2003 | 273 | 4.25% | 25 | 3.53% | 248 | 4.34% | 173 | 5.45% |
| 2004 | 322 | 5.01% | 23 | 3.24% | 299 | 5.23% | 173 | 5.45% |
| 85 to 04 | 6423 | | 709 | | 5714 | | 3177 | |
| Average | 321.15 | | 11.04% | | 88.96% | | 49.46% | |

( *Continued* )

**TABLE 1. (Continued)**

| Year | No. of Cash Deals | % of Cash Only | No. of Stock Deals | % of Stock Deals | No. of Mixed Deals | % of Mixed Deals | Average Deal Value (Million £) |
|---|---|---|---|---|---|---|---|
| 1985 | 13 | 0.44% | 3 | 0.80% | 4 | 0.13% | 22.1 |
| 1986 | 40 | 1.34% | 8 | 2.14% | 17 | 0.56% | 35.3 |
| 1987 | 109 | 3.65% | 26 | 6.95% | 56 | 1.83% | 33.2 |
| 1988 | 177 | 5.93% | 12 | 3.21% | 117 | 3.82% | 23.4 |
| 1989 | 131 | 4.39% | 26 | 6.95% | 132 | 4.31% | 22.3 |
| 1990 | 122 | 4.09% | 7 | 1.87% | 102 | 3.33% | 15.5 |
| 1991 | 117 | 3.92% | 12 | 3.21% | 94 | 3.07% | 28.2 |
| 1992 | 111 | 3.72% | 18 | 4.81% | 102 | 3.33% | 16.6 |
| 1993 | 116 | 3.88% | 19 | 5.08% | 110 | 3.59% | 14.7 |
| 1994 | 160 | 5.36% | 20 | 5.35% | 149 | 4.86% | 16.1 |
| 1995 | 149 | 4.99% | 20 | 5.35% | 174 | 5.68% | 14.4 |
| 1996 | 163 | 5.46% | 21 | 5.61% | 174 | 5.68% | 20 |
| 1997 | 230 | 7.70% | 28 | 7.49% | 241 | 7.87% | 37.4 |
| 1998 | 314 | 10.52% | 26 | 6.95% | 263 | 8.59% | 23.4 |
| 1999 | 235 | 7.87% | 19 | 5.08% | 288 | 9.40% | 42.5 |
| 2000 | 220 | 7.37% | 35 | 9.36% | 316 | 10.32% | 37.8 |
| 2001 | 132 | 4.42% | 32 | 8.56% | 274 | 8.95% | 19.2 |
| 2002 | 161 | 5.39% | 16 | 4.28% | 167 | 5.45% | 25.9 |
| 2003 | 127 | 4.25% | 15 | 4.01% | 131 | 4.28% | 36.6 |
| 2004 | 159 | 5.32% | 11 | 2.94% | 152 | 4.96% | 37 |
| 85 to 04 | 2986 | | 374 | | 3063 | | 26.08 |
| Average | 46.49% | | 5.82% | | 47.69% | | |

( *Continued* )

**TABLE 1. (Continued)**

**Note:** This table presents the summary statistics by year for a sample drawn from Securities Data Corporation (SDC) Mergers and Acquisitions database and consists of 6423 U.K acquisitions undertaken by 1367 publicly listed acquirers from 1985 to 2004. No. of Deals (% of deals) represents the number (percentage) of deals by year. Accordingly, the number (%) of public and private targets is presented in the table. Public (private) targets are firms that are listed in the LSE. Related deals represent the deals where the bidder is in the same industry with the target as defined by the 2-digit SIC code. Cash (stock) deals represent the deals with the use of 100% cash (stock) in the transaction. All others are defined as mixed deals. Average Deal value by year provided by SDC is also presented in the table.

only 5% of the transactions are pure stock.[5] Previous studies focused on the US market have pointed out that the use of cash (stock) as a medium of exchange declined (increased) slightly (substantially) during the 1990s. However, this was not the case in the UK where cash offers dominated the market throughout the sample period.

In unreported statistics, it is observed that among the 709 acquisitions of public targets during the sample period, over 48% were related acquisitions. Nearly 20% of the deals were financed by pure stock, and 38% of the deals used cash as the sole medium of payment. The deal value for typical public targets was about 109 million pounds. In addition, for private acquisitions cash only deals accounted for 48% of the transactions and stock deals for only 4% of the transactions. The average value of a non-public acquisition during the sample period was only 15% of the size of the public target acquisitions.

Table 2 contains summary statistics regarding the sterling value of the deals in the sample. The total sterling value of all acquisitions over the sample period was about 147 billion pounds. Average deal values rose during the sample period. Before 1990 the average deal value was about 4 billion pounds, but by 1999 the average deal value exceeded 18 billion pounds. Although publicly traded targets accounted for less than 12% of the acquisitions, they accounted for 53% by value. The proportion of public acquisitions slightly increased from the early sample period to the late sample period. Over 55% of acquisitions were related, with no any distinct pattern throughout the sample period. Stock only acquisitions accounted for 5% by number, but over 16% by value.

Given that in this study the performance of frequent versus infrequent bidders is also examined, table 3 presents the distribution of acquirers according to the frequency of acquisitions made during the sample period. While the average acquirer made four acquisitions, about 25% of all firms made only one acquisition during this time period. In fact, 72% of all acquirers made five or less acquisitions during the sample period, which accounts for about 37% (2389 deals) of all acquisitions.[6]

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5. Cash (stock) deals represent the deals with the use of 100% cash (stock) in the transaction. All others are defined as mixed deals. Our statistics are consistent with Faccio and Masulis (2005) who show that 80.2% of U.K. acquisition deals during the 1997-2000 period were cash financed.

6. The most frequent acquirers in the sample were Capital Group PLC and Emap PLC, which made 54 and 53 acquisitions, respectively, during the 20-year sample period.

**TABLE 2. Summary Statistics by Sterling Value of UK M&A Activity (1985-2004)**

| Year | All Deals | Non-Public Targets | Public Targets | Related Deals | Cash Deals | Stock Deals |
|---|---|---|---|---|---|---|
| 1985 | 1.06 | 0.7 | 0.35 | 0.16 | 0.43 | 0.19 |
| 1986 | 1.8 | 0.42 | 1.38 | 0.59 | 1.39 | 0.33 |
| 1987 | 5.18 | 2.86 | 2.32 | 2.8 | 2.67 | 1.68 |
| 1988 | 6.1 | 2.74 | 3.36 | 2.11 | 4.81 | 0.18 |
| 1989 | 5.45 | 2.03 | 3.42 | 2.71 | 3.24 | 0.53 |
| 1990 | 2.87 | 1.65 | 1.22 | 1.65 | 0.92 | 0.2 |
| 1991 | 5.22 | 2.96 | 2.26 | 0.99 | 1.96 | 0.13 |
| 1992 | 3.2 | 1.88 | 1.32 | 0.61 | 1.14 | 0.11 |
| 1993 | 3.18 | 1.41 | 1.77 | 1.8 | 1.24 | 0.44 |
| 1994 | 4.66 | 2.27 | 2.39 | 2.12 | 2.49 | 0.22 |
| 1995 | 4.27 | 1.31 | 2.96 | 1.64 | 2.02 | 0.53 |
| 1996 | 6.17 | 2.04 | 4.13 | 3.55 | 2.84 | 1.47 |
| 1997 | 16.59 | 12.08 | 4.5 | 13.66 | 3.62 | 10.21 |
| 1998 | 11.7 | 6.15 | 5.54 | 6.14 | 7.12 | 0.9 |
| 1999 | 18.44 | 7.17 | 11.27 | 11.5 | 8.62 | 0.27 |
| 2000 | 18.09 | 8.33 | 9.76 | 8.77 | 6.56 | 4.96 |
| 2001 | 7.13 | 2.61 | 4.53 | 3.92 | 2.52 | 0.59 |
| 2002 | 7.35 | 1.8 | 5.55 | 5.18 | 4.56 | 0.55 |
| 2003 | 8.24 | 4.94 | 3.3 | 5.94 | 2.64 | 0.8 |
| 2004 | 10.48 | 4.06 | 6.42 | 5.68 | 5.33 | 0.61 |
| 85 to 04 | 147.18 | 69.43 | 77.74 | 81.5 | 66.12 | 24.91 |
| % | 100.00% | 47.17% | 52.82% | 55.37% | 44.92% | 16.92% |

**Note:** This table presents summary statistics on sterling value as of CPI index (2004) for 6423 M&A deals undertaken by 1367 publicly listed acquirers from 1985 to 2004 for which deal values are available (See notes in table 1 for definitions of the variables).

**TABLE 3. Acquisition Frequency of UK Public Acquirers**

| Number of Acquisitions | Number of Bidders | Percent of Bidders | Cumulative Percentage |
|---|---|---|---|
| 1 | 348 | 25.46% | 25.46% |
| 2 | 228 | 16.68% | 42.14% |
| 3 | 203 | 14.85% | 56.99% |
| 4 | 104 | 7.61% | 64.59% |
| 5 | 112 | 8.19% | 72.79% |
| 6 | 77 | 5.63% | 78.42% |
| 7 | 52 | 3.80% | 82.22% |
| 8 | 41 | 3.00% | 85.22% |
| 9 | 36 | 2.63% | 87.86% |
| 10 | 32 | 2.34% | 90.20% |
| 11 | 27 | 1.98% | 92.17% |
| 12 | 12 | 0.88% | 93.05% |
| 13 | 23 | 1.68% | 94.73% |
| 14 | 11 | 0.80% | 95.54% |
| 15 | 11 | 0.80% | 96.34% |
| 16 | 9 | 0.66% | 97.00% |
| 17 | 2 | 0.15% | 97.15% |
| 18 | 3 | 0.22% | 97.37% |
| 19 | 4 | 0.29% | 97.66% |
| 20 | 3 | 0.22% | 97.88% |
| 21-60 | 29 | 2.12% | 100.00% |

**Note:** The number of acquisitions indicates the quantity of acquisitions undertaken by each bidder between 1985 to 2004. Percent of bidders is defined as the number of bidders in each category of number of acquisitions as a percentage of the total number of bidders. Cumulative percentage is the sum of percentages by number of acquisitions.

### *C. Methodology*

Excess returns are calculated based on Market-Adjusted Returns (MARs) and Cumulative Market-Adjusted Returns (CMARs) as follows:

$$MAR_{i,t} = R_{i,t} - R_{m,t} \tag{1}$$

$$MAR_{P,t} = \left(\frac{1}{N_t}\right)\sum_{i=1}^{N_t}\left(R_{i,t} - R_{M,t}\right) \tag{2}$$

$$CMAR_{P,t}\sum_{t=1}^{T}\left(MAR_{P,t}\right) \tag{3}$$

$$\sigma_{P,T} = \sigma\sqrt{T} \tag{4}$$

where $R_{i,t}$ is the return to the $i^{th}$ firm on month $t$; $R_{M,t}$ is the return to the equally-weighted market portfolio on day (month) $t$; $N_t$ is the number of firms in the portfolio on month $t$; $T$ is the end of the accumulation period as well as the number of periods; and $\sigma_P$ is the time-series standard error of the *MAR*, estimated from the returns data prior to the event window. The data is centred on the month of the acquisition announcement as appropriate, and an average abnormal return to the acquiring firms relative to this event date is computed.

To investigate whether it is better for a firm to grow through many small acquisitions or through a small number of large acquisitions, the work adheres to the approach of Bradley and Sundaram (2004) with the use the value index (*VI*) methodology. A *VI* portfolio was formed according to the merger sample over the sample period 1985 to 2004. Each acquirer's return was converted into a *VI*, and logged to smooth away any price shocks, and minimize the effects of the extreme values of *VI* from some firms. Some firms in the sample had *VI*s greater than 10. By using this methodology the negative effects of non-normal distribution of each firm's return were minimized, which enhances the validity of time series returns. All the years after the first merger (including the year of merger) were employed and adjusted the index for the performance of the market during the corresponding period. The log of the twenty-year market-adjusted *VI* for acquirer *i* is calculated as:

$$MALVI_i = LN\left\{\prod_{t=1}^{T}\left(1+R_{i,t}\right)\right\} - LN\left\{\prod_{t=1}^{T}\left(1+R_{m,t}\right)\right\} \tag{5}$$

where $T$ is the last month in the calculation (December, 2004), $R_{i,t}$ is the return to the $i^{th}$ acquirer in month $t$, and $R_{m,t}$ is the market return in month $t$.

## IV. Empirical Results

### A. *Does Pre-Takeover Performance Drive Acquirer Long-Term Performance?*

Initially, the first hypothesis, which suggests that acquirer post-event

**TABLE 4. Pre- and Post- event Cumulative Monthly Market-Adjusted Returns (CMMARs) by Public and Non-Public Targets and Method of Payment**

| | Pre-event | Post-event |
|---|---|---|
| | Month (–36 to –1) | Month (+1 to +36) |
| All Acquirers | 17.18% | –18.87% |
| | (2.86**) | (–2.01*) |
| Public Targets (1) | 7.99% | –18.29% |
| | (1.43) | (–1.60) |
| Non -Public Targets (2) | 22.15% | –19.77% |
| | (3.69**) | (–3.04**) |
| Cash Deals (3) | 15.81% | –14.38% |
| | (4.82**) | (–4.26**) |
| Stock Deals (4) | 27.31% | –44.19% |
| | (4.00**) | (–2.91**) |
| Mixed Deals (5) | 16.70% | –19.00% |
| | (0.99) | (–1.41) |
| (1)-(2) | –15.84% | 1.48% |
| | (–1.79) | (1.23) |
| (3)-(4) | –12.50% | 29.81% |
| | (–0.76) | (0.96) |
| | Month (–24 to –1) | Month (+1 to +24) |
| All Acquirers | 10.51% | –12.39% |
| | (3.24**) | (–1.60) |
| Public Targets (1) | 8.89% | –9.68% |
| | (2.92**) | (–1.15) |
| Non -Public Targets (2) | 14.33% | –14.29% |
| | (3.85**) | (–5.50**) |
| Cash Deals (3) | 10.19% | –11.83% |
| | (4.66**) | (–3.22**) |
| Stock Deals (4) | 19.87% | –24.98% |
| | (0.83) | (–1.20) |
| Mixed Deals (5) | 12.17% | –21.27% |
| | (1.56) | (–1.93*) |
| (1)-(2) | –6.56% | 4.61% |
| | (–3.19**) | (1.86*) |
| (3)-(4) | –10.33% | 13.15% |
| | (–1.39) | (2.01*) |

( *Continued* )

performance is driven by firm's pre-acquisition performance, was considered.[7] Table 4 reports the results of this analysis. The CMMAR

7. It has been documented in the literature that different acquirer or deal characteristics prior to the acquisition lead to different performance. For example, Dahya (1998) provides

**TABLE 4. (Continued)**

| | Pre-event | Post-event |
|---|---|---|
| | Month (–12 to –1) | Month (+1 to +12) |
| All Acquirers | 7.51% (2.88**) | –9.11% (–1.96*) |
| Public Targets (1) | 5.49% (3.19**) | –6.65% (–2.42**) |
| Non -Public Targets (2) | 9.40% (1.94*) | –11.64% (–1.88*) |
| Cash Deals (3) | 6.92% (2.02*) | –4.08% (–1.97*) |
| Stock Deals (4) | 13.88% (1.42) | –21.61% (–3.09**) |
| Mixed Deals (5) | 7.03% (1.39) | –11.41% (–1.58) |
| (1)-(2) | –4.09% (–2.51**) | 1.01% (2.53**) |
| (3)-(4) | –7.04% (–3.67**) | 17.53% (1.99*) |

**Note:** t -stats are presented in parenthesis. ** represents significance at 1% level, * represents significance at 5%. (1)-(2) is the difference between acquisitions of public targets minus acquisitions of private targets. (3)-(4) is the difference between cash acquisitions minus stock acquisitions.

to the portfolio of all firms in the three years prior to the event month is 17.18% and significant at the 1% significance level.[8] The CMMAR to the portfolios of acquirers of non-public and public targets are 22.15% and 7.99%, respectively. Similar results are obtained for the two-year and one-year pre-event analysis, respectively.[9]

For the overall sample, the three-year post-announcement return is, negative (–18.87%) and significant at the 5% level. A similar pattern is found, but lower in magnitude, in the 24- and 12-month period analysis.

evidence that hostile acquisitions are associated with lower abnormal returns prior to the takeover.

8. To avoid any potential problem arising from overlapping observations due to multiple acquirers being present in our sample, we follow Mitchell and Stafford (2000) and perform also a Calendar Time Portfolio Regressions (CTPRs) approach. The results obtained are qualitatively similar with this approach.

9. Our results are qualitatively similar when we use a 121-day (–60, +60) and 41-day event windows (–20, +20), respectively but are not presented for space purposes.

After partitioning the results by the target ownership status, better performance, on average, is found for acquisitions of non-public firms in all event windows. In summary, these initial results are consistent with the prior literature (Bradley and Sundaram (2004)) suggesting that acquisitions are not the direct cause of but rather the effect of firm's good performance, confirming hypothesis 1.

### *B. Is the Method of Payment Related with Price Run-Up and Bidder Long-Term Performance?*

Table 4 also reports the results for pre- and post event performance by method of payment. The CMMAR for the 36-month pre-event period in the portfolio of cash acquisitions is equal with 15.81% and significant at the 1% level; for stock acquisitions, CMMAR equals to 27.31% (t-value= 4.00). The results show that stock bidders exhibit a significant price run-up prior to an announcement. This is consistent with the overvaluation hypothesis, which suggests that bidders who consider their stock overvalued compared to the target stock, use stock to take advantage of this overvaluation. The results also indicate that the pre-announcement run-up over this two-year period was significantly greater for stock bidders rather than cash bidders, consistent with Bradley and Sundaram (2004). However, after the acquisition announcement there was a reversal. Bidders that used stock as a method of payment experienced a significant price drop of –44.19% for the 36-month post-event event window. The post-announcement performance is on average better for cash bidders (difference is statistically significant for the 24- and 12-month period). These results are consistent with Loughran and Vijh (1997). Overall, these findings serve to support hypothesis 2.

### *C. Do Bidders Gain More Through Acquisitions of a Large Number of Small Targets or a Small Number of Large Targets?*

In this section, the analysis turns its attention to ascertaining the validity of the hypothesis of whether it is better for a firm to grow through many small acquisitions rather than through a small number of large acquisitions. This hypothesis predicts that returns to acquiring firms will be positively correlated with the number of acquisitions and negatively correlated with the relative size of the assets acquired. If this holds, it will imply that acquisitions can also drive performance and, therefore,

it is not only performance that drives acquisitions.

Table 5 presents the results of the cross-sectional regressions of the log of each firm's market-adjusted VI on the number of acquisitions and the relative size of the targets acquired during the twenty-year sample period. The relative size of target to bidder is defined as the deal value divided by bidder market value one month prior to the announcement date. The empirical results show that the log of the market-adjusted acquirer's twenty-year VI is positively related with the number of acquisitions, while it is significantly negatively associated with the relative size of the acquisition.[10] These results come in contrast with the US evidence (Bradley and Sundaram (2004)) implying that corporate acquisitions can also be the cause of good performance and not just the effect.

To verify that the results generated are not driven by certain bidder and/or deal characteristics, a number of other control variables that have been found in the literature to affect bidder returns are used: i) High merger activity, which is a dummy taking the value of one if the deal takes place over the periods 1987 to 1989 and 1997 to 2000 and zero otherwise. It is expected that a negative sign be found as during a high merger activity period there is excessive competition which increases the premium offered by bidders. ii) Stock and cash dummies, which take the value of 1 if the deal in financed with 100% stock and 100% cash respectively, and 0 otherwise. Travlos (1987) documents that bidders financing deals with stock in public acquisitions experience lower returns. Chang (1998) shows a positive relationship for this relationship in private acquisitions. iii) Book-to-market ratio is calculated as the bidder's net book value divided by its market value of equity four weeks prior to the acquisition announcement. Servaes (1991) shows that bidders with high Tobin's Q, which is negatively related to

10. Doukas and Petmezas (2007) use frequent acquirers as a proxy of managerial overconfidence and provide evidence that they are related with lower long-term returns (as well as announcement returns). There are three differences with our study: First, in the definition of frequent acquirer, where bidders are defined as overconfident if they conduct five or more deals within a 3-year period. Our multiple acquirers are defined as those that make four or more deals during the entire period from 1985 to 2004. Second, Doukas and Petmezas (2007) use 1- 2- and 3- year post-acquisition returns, while we use a 20-year Value Index. Third, Doukas and Petmezas (2007) do not control for various bidder and deal-characteristics when examining acquirer long-term returns. It is likely that firm size and the relative size of the deal can affect acquirer returns, as acquirers who are infected by managerial overconfidence are most often relatively larger firms (Moeller, Schlingemann and Stulz, 2004), that are, in turn, the ones who buy large targets and make large deals.

**TABLE 5. Regression of the log of Market-Adjusted Acquirer's Twenty-year Value Index (LVI) on the Number of Acquisitions and the Relative Size across Different Valuation**

| Log of the Acquirer's Twenty-Year Value Index | |
|---|---|
| Constant | 0.130 |
| | (1.42) |
| Relative Size of Acquisitions | –0.220 |
| | (–4.32)** |
| Number of Acquisitions | 0.100 |
| | (2.37)** |
| High Merger Activity | –0.089 |
| | (–0.98) |
| Stock | –0.041 |
| | (–1.22) |
| Cash | 0.190 |
| | (2.06)* |
| B/M | –0.250 |
| | (–4.18)** |
| Hostile | 0.010 |
| | (0.54) |
| Tender Offer | 0.009 |
| | (0.40) |
| Diversification | 0.360 |
| | (2.32)** |
| First Deal | 0.089 |
| | (0.85) |
| Second and More Deals | 0.070 |
| | (1.82)* |
| Adj. $R^2$ | 6.39% |
| No. of Observations | 1367 |

**Note:** Relative size is defined as the deal value divided by bidder market value one month prior the announcement date. Number of Acquisitions is the total number of deals that have been conducted in the sample period (1985-2004). High Merger Activity Dummy equals to 1 for deals that took place over the periods 1987-1989 and 1997-2000 and 0 otherwise. Stock (Cash) is a dummy which equals to one if the method of payment is100% stock (cash). Book-to-market ratio is calculated as the bidder's net book value divided by its market value of equity four weeks prior to the acquisition announcement, Hostile deals, which is a dummy taking the value of one for deals that are reported as "hostile" or "unsolicited" in SDC Tender offer is a dummy for deals that are defined as tender offers in SDC and 0 otherwise Diversifying deals are those where the 2-digit SIC code of the bidder is different from that of the target. First Merger Dummy equals to one if it is the first deal carried out by the bidder in the sample period. Second and More Merger Dummy equals to one if there are previous deals conducted by the bidder in the sample period. t -stats are presented in parenthesis. ** represents significance at 1% level, * represents significance at 5%.

book-to-market ratio, experience higher announcement period returns. iv) Hostile deals is a dummy taking the value of one for deals that are reported as "hostile" or "unsolicited" in SDC. Servaes (1991) documents that hostile bids are associated with relatively lower bidder returns, while Schwert (2000) finds no significant effect. v) Tender offer is a dummy for deals that are defined as tender offers in SDC and 0 otherwise. Jensen and Ruback (1983) find that tender offers are associated with higher bidder announcement returns. vi) Diversifying deals are those where the 2-digit SIC code of the bidder is different from that of the target. Recent evidence shows that diversification may be related with higher firm value (Campa and Kedia (2002) and Villalonga (2004)). vii) Finally, two additional dummies are used, namely the first deal dummy and the second and more deals dummy to provide information on the marginal contribution to firm performance of each additional merger. Consistent to the earlier predictions made, a positive relationship of the bidder value index with the second and more deals dummy, the cash dummy, and the diversification dummy is found. As also predicted, the bidder value index is negatively associated with bidder book-to-market ratio.

Overall, these findings suggest that if a firm wishes to grow through an M&A strategy, this is more likely through small acquisitions. This is rational bearing in mind that it is easier for bidders to integrate smaller targets. In addition, most small firms include non-public firms which might wish to sell their firm at a discount price for liquidity reasons (Fuller et al. 2002). This leads to positive performance for bidding firms. In addition, frequent bidders can accumulate the experience and capital gained from many previous acquisitions, that is, with a series of smaller acquisitions the acquirer has the opportunity to gain experience and learn from past mistakes avoiding repeating them in the future.

To enhance the validity of the findings of this work, a categorical analysis is conducted in table 6. More specifically, the relationship between the acquirer's return with the number of acquisitions and the relative size (RS) of the assets acquired is directly examined. If the hypothesis 3 holds, then a positive relationship is expected to be found between the returns of acquirers with many acquisitions while a negative relationship between the returns of acquirers with the relative size of the asset acquired is also expected. A cross-sectional regression was conducted for the log of a firm's VI on the number of acquisitions it made, and the relative size of the assets it acquired during the sample

**TABLE 6. Categorical Analysis of the log of Acquirer's Twenty-year Value Index (LVI) for all Acquirers, Frequent Acquirers, Infrequent Acquirers, Public Deals, Non-Public Deals by Relative Size**

| Relative Size | All Acquirers | Infrequent Acquirers | Frequent Acquirers | Public Deals | Non-Public Deals | Public minus Non-Public | Frequent minus Infrequent |
|---|---|---|---|---|---|---|---|
| Smallest Quintile (1) | 0.421 | 0.239 | 1.193 | 0.276 | 0.697 | –0.42 | 0.125 |
| Number | 272 | 154 | 117 | 141 | 1142 | (–4.80)** | (1.81)* |
| Range | <0.026 | | | | | | |
| Second Quintile (2) | 0.254 | 0.192 | 0.646 | 0.139 | 0.713 | –0.574 | 0.519 |
| Number | 273 | 155 | 118 | 142 | 1143 | (–2.62)** | (2.49)** |
| Range | 0.026 | | | | | | |
| Third Quintile (3) | 0.173 | –0.057 | 0.431 | 0.023 | 0.276 | –0.253 | 0.225 |
| Number | 271 | 154 | 116 | 142 | 1143 | (–3.51)** | (–0.61) |
| Range | 0.026–0.065 | | | | | | |
| Fourth Quintile (4) | 0.039 | –0.133 | 0.119 | –0.184 | 0.159 | –0.343 | 0.72 |
| Number | 275 | 156 | 118 | 142 | 1143 | (–0.98) | (1.78)* |
| Range | 0.065–0.10 | | | | | | |

( *Continued* )

**TABLE 6. (Continued)**

| Relative Size | All Acquirers | Infrequent Acquirers | Frequent Acquirers | Public Deals | Non-Public Deals | Public minus Non-Public | Frequent minus Infrequent |
|---|---|---|---|---|---|---|---|
| Largest Quintile (5) | –0.077 | –0.215 | –0.164 | –0.253 | –0.088 | –0.165 | –0.897 |
| Number | 275 | 153 | 116 | 142 | 1143 | (–3.50)** | (–2.98)** |
| Range | >0.10 | | | | | | |
| (1)-(5) | 0.238 | 0.192 | 0.962 | 0.529 | 0.767 | | |
| | (4.92)** | (–0.65) | (2.92)** | (3.55)** | (2.39)** | | |

**Note:** Frequent acquirers are defined as firms that made four or more acquisitions during the sample period and include 595 bidders. All others are infrequent bidders and consist of 772 bidders. Relative size of target to bidder is defined as the deal value divided by bidder market value one month prior the announcement date. t-stats are presented in parenthesis. ** represents significance at 1% level, * represents significance at 5%. (1)-(5) is the difference between the smallest and largest quintile.

period. The relative size was measured by tabulating the deal value and pre-bid value of the acquiring firm for each acquisition, made by each firm. The sum of the value of the deals was taken and divided by the sum of the values of the acquiring firms at the time of each transaction providing, thus, an average of the relative size. Table 6 consists of five groups corresponding to the quintiles of the relative size of the whole sample. It examines the performance of all acquirers, infrequent acquirers, frequent acquirers, public deals and non-public deals. Frequent acquirers are defined as firms that made four or more acquisitions during the sample period and this group consists of 595 bidders. All others are defined as infrequent acquirers and consist of 772 bidders.[11]

By performing this analysis, strong evidence is once again reaffirmed that it is better for a firm to grow through many small acquisitions than through a small number of large acquisitions. The average logged VI for all acquirers decreases monotonically as the relative size increases for all, public and private deals. This is consistent with the findings reported in table 5 that the gain to the acquirer is negatively related to the relative size of the target. The results also show that for each quintile, the returns to infrequent acquirers were significantly lower than the returns to frequent acquirers. Furthermore, for frequent acquirers, returns were found to be positive apart from the largest relative size quintile, while for infrequent acquirers most of the returns were negative. This could be explained by the learning by doing hypothesis (Haleblian and Finkelstein (1999)), whereby frequent bidders gain experience through many small acquisitions, and learn from their past, including the mistakes they have made. As a consequence, they will be less prone to hubris or empire-building incentives' effects and thus exhibit better performance. In, almost all cases, the difference between the top and bottom quintiles is statistically significant. In short, the results of this paper confirm hypothesis 3, thus contradicting Bradley and Sundaram's (2004) conclusion that acquisitions do not drive performance. This finding is plausible if the very thin use of stock in the UK takeover market is considered. If the market performance was the only driving force behind UK M&A deals, then it would be expected that a substantial larger number of stock

11. For robustness reasons the analysis was also conducted by categorizing frequent acquirers as firms undertaking three or more acquisitions, and five or more acquisitions. The results using these classifications are robust and support the hypothesis.

acquisitions would be witnessed. Hence, this finding indicates that in the UK corporate acquisitions can also be the cause of good performance and sheds light on existing theories of merger program, providing empirical backup to firms that are involved in many small acquisitions to create value and achieve growth.

## V. Conclusion

In this paper, the link between the causes and effects of mergers and acquisitions is investigated. Using an exhaustive database of domestic acquisitions undertaken by UK publicly traded firms from 1985 to 2004 in a takeover market with the unique feature of very thin use of stock deals and the dominance of acquisitions of private targets, it is found that there is an average significant price run-up for UK acquirers followed by a significant reversal in the long-run. This suggests that mergers can be the outcome of good performance rather than the cause. Further, consistent with the overvaluation theory, evidence is provided relating to the notion that there is a larger price run-up for acquisitions with stock method of payment relative to cash. Finally, the dominance of non-public targets, which are relatively smaller compared to public ones, serves to test acquisition strategies related with frequent deals. The evidence suggests that firms tend to perform better through many small acquisitions rather than a small number of large deals, implying that corporate acquisitions can also be the cause of good performance and not just the effect. Overall, this work complements the previous findings of US studies, supporting market driven acquisitions, while also providing further insights about the causes and effects of mergers and acquisitions in a takeover market with distinct characteristics.

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