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Post-takeover returns: The UK evidence

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Abstract

This paper looks for abnormal stock returns after the completion of takeovers in the UK. Over the period 1975 to 1990, and controlling for size, UK acquirers show zero abnormal returns in the three years following completion. However, over shorter periods we find evidence of significant clustering of positive and negative returns. © 1998 Elsevier Science B.V.

1. Introduction

A number of studies (see Jensen and Ruback. 1983; [1] Magenheim and Mueller, 1988: Franks et al., 1988) found negative abnormal stock returns over several years following the completion of takeovers. These studies have provoked an enduring puzzle in empirical corporate finance. Systematic negative returns after takeovers challenge market efficiency, and if there is stock mis-pricing at takeover announcement this could undermine the consensus from the many studies of announcement period returns, that takeovers are value-creating or at least value-preserving events. [2] The study of stock returns over longer periods is crucial for a

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[1] Jensen and Ruback reviewed seven studies and found that investors make an average return of *-5.5%* in the twelve months post-takeover. Studies which fail to find significant negative post-takeover performance include Bradley and Jarrell (1988).

[2] See Caves (1989) for a review of this literature.

proper evaluation of takeovers. However the early post-takeover studies were often by-products of an announcement period study and typically measured abnormal returns against a benchmark such as the market model, or a CAPM-based measure in which the market return is proxied by a value-weighted or equal-weighted index. These benchmarks can be biased, particularly when returns are aggregated over long periods, so that the observed post-takeover abnormal returns may have been caused by omitted factors in the experimental design. Size is a particularly pertinent factor when measuring takeover returns since the population of quoted acquirers is unlikely to be represented by either a value-weighted or the equal-weighted market index. If there is serial correlation in stock returns (for example, DeBondt and Thaler, 1985; Jegadeesh and Titman, 1993) and, say, takeovers tend to follow periods of positive performance in acquirers' stock, this could generate spurious post-takeover abnormal returns. Finally, acquirers may be atypical in other priced factors, such as dividend-yield or the price-earnings ratio (Banz, 1981; Basu, 1983; Cook and Rozeff, 1984; Rozeff and Zarnan, 1988).

Franks et al. (1991) appear to resolve the puzzle, and to confirm the benchmarking explanation. They study returns over the three years post-completion, to US takeovers occurring between 1975 and 1984. They find that while acquirers display significant post-takeover abnormal returns against conventional benchmarks, abnormal returns disappear when excess returns are regressed on a benchmark containing proxies for firm size, past returns, and dividend-yield. But Agrawal et al. (1992) have reopened the debate. They examine US takeovers over a much longer period, from 1955 to 1987. Against a benchmark that controls for size and for dividend-yield, stockholders in acquiring firms suffer a significant wealth loss that averages 10% over the five years following takeover. Over most of their period of study, losses were rather higher than this, but the authors found significant positive returns following takeovers consummated in the period 1975 through 1979, which caused the zero average reported by Franks et al. (1991) for 1975 through 1984.

This paper reports the evidence on post-takeover stock returns in the UK, which, like the US, has both a sophisticated capital market and a very active market for corporate control. In a near exhaustive sample of takeovers between UK quoted companies over the 16 years 1975 to 1990, there is no evidence of negative abnormal returns over the three years following takeover completion. Equal weighted abnormal returns, measured against a benchmark that controls for firm size, are not significantly different from zero. This also holds for a sample of relatively large takeovers. These equal-weighted results may understate the returns that an investor who holds a value-weighted portfolio of acquirers could expect. Mainly driven by a few very large takeovers, value-weighted abnormal returns are positive and significant at *5%* measured over three years post-takeover. The portfolio investor will also capture a significantly positive return to acquirers that do not survive the holding period, most of which are themselves acquired at a premium. But there are not enough of these to materially alter the overall

conclusion. We find no evidence that post-takeover abnormal returns are systematically related to dividend-yields, or to past stock returns.

Post-takeover returns are sensitive to the observation period, and display a rather similar profile in the UK to that reported by Agrawal et al. in the US. Over most of 1975 to 1990 equal-weighted post-takeover abnormal returns are negative, and zero on a value-weighted basis. But the 20% of the sample comprising takeovers that occurred between 1981 and 1984 delivered a 26% positive abnormal return during the two years after completion.

Section 2 of the paper discusses the methodology, and Section 3 describes the data and sample. Section 4 contains the empirical results and Section 5 draws some conclusions.

2. Methodology

2.1. Measurement of post-takeover returns

Post-takeover returns are computed for each stock using monthly data from the London Share Price Database (LSPD). If P_{jt} is the mid-market price on the final trading day of month t, and D_{jt} is the gross of tax dividend if the stock goes ex div during the month, then the pretax return on stock j in month t is

$$R_{jt} = \frac{P_{jt} - P_{jt-1} + D_{jt}}{P_{jt-1}}$$

Returns are aggregated as the holding period abnormal return, HPAR, which is the difference between the return to buying and holding the stock over the observation period n, and the return on the benchmark over the same period. So

$$HPAR_j = \prod_{t=1}^{n}(1 + R_{jt}) - \prod_{t=1}^{n}(1 + R_{et}) \qquad (2)$$

where R_{et} is the benchmark return in period t, and n is measured from the end of the month of completion of the takeover.

The benchmark return, R_{et}, is the return on an equal-dollar portfolio of all firms in the acquirer's size decile in period t.[3] All companies on the LSPD are ranked by market capitalization and assigned (by size) to ten numerically equal portfolios. The population is reassigned to size-deciles on the 1st January each year and holdings within deciles are rebalanced monthly.[4] The size-class of the acquirier is identified

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[3] For comparative purposes abnormal returns are also calculated against a value-weighted benchmark. R_{ft} .proxied by the return on the FTA index.

[4] This is equivalent to Roll's buy-and-hold strategy with a monthly review period (Roll. 1983). We also experimented with a benchmark in which equal holdings are bought in companies in the acquirer's size decile and then held for n periods without rebalancing (Conrad and Kaul. 1993). This made no significant difference to the results.

on the basis of the aggregate market capitalization of the target and acquirer at the beginning of the bid year. If small firms tend to earn higher stock returns than large firms, abnormal returns measured against a conventional value-weighted index will be overstated for all but the largest acquirers; benchmarking against size-class effectively controls for the size factor (Dimson and Marsh, 1986). However, the size effect is not stable through time. In most years small firms earn higher returns than large firms, but in the late eighties and early nineties this reversed in the UK. [5] This reversal is important for interpreting results for this sample because it occurred during the post-takeover period of the significant group of takeovers consummated in the merger boom of the mid-eighties. During this period, acquirers tend to record *lower* returns against a value-weighted index than against a benchmark that controls for firm size.

We measure buy-and-hold returns, rather than the cumulative abnormal returns in the great majority of event studies including takeover studies since Fama et al. 1969). By summing period abnormal returns, CAR implicitly assumes that the portfolio is re-balanced every period to maintain equal-dollar value of investment. Whilst CAR has the statistical virtue of preserving homoscedasticity it does not represent a feasible investment strategy, and for assessing gains or losses of value over time, a buy-and-hold strategy is more pertinent. Moreover, additive abnormal returns show an upward bias, which is an increasing function of the bid-ask spread and of the number of cumulations (Roll, 1983; Blume and Stambaugh, 1983). Conrad and Kaul (1993) find significant upward bias even with monthly abnormal returns, when they are cumulated over long periods.

2.2 Significance testing

$\overline{\text{HPAR}}$ is the cross-sectional equal-weighted average of the individual abnormal returns in event-time. Significance is tested using a two-tailed test as *HPAR / SE* the cross-sectional standard error. We also count the number of negative abnormal returns and compute their significance using the *z*-statistic, which is approximately normally distributed with mean *0* and variance 1 under the null hypothesis. The test statistic for this sign test is

$$Z = \frac{\left| P - P* \right| - \frac{1}{2} N}{\sqrt{P*(1-P*)/N}}$$

Where N is the number of observations, *P ** is the expected proportion of *P* is the actual proportion. Sign tests have long been in use in work of this kind [6] even though Brown and Warner (1980) show that they can generate type 1 errors where *t*-tests do not, if stock returns are right-skewed so that the expected number of

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[5] A reversal of the size effect has been reported in US studies, for example Brown et al. (1983)
[6] Kaplan and Roll (1972) is an early example.

positive abnormal returns is below the usually assumed 50%. In this study $P *$ is derived empirically. We calculate the average number positive when every firm on LSPD is shorted against the benchmark. When the sample is divided into sub-periods $P *$ is recomputed for each sub-period. Though 50% provides an inappropriate benchmark when there is cross-sectional skewness in returns, the computed $P *$ will overcompensate for skewness if there is cross-sectional heteroskedasticity in returns. [7] So in interpreting the empirical results below the computed $P *$ should be seen as bounding the expected proportion of positive returns.

3. Data and sample

The sample comprises all successful bids involving UK-listed companies during the period 1975 to 1990, where both acquirer and target are continuously recorded on the London Share Price Database (LSPD) during the takeover announcement period and a market capitalization is recorded for both firms at the beginning of the year of announcement. There are 830 takeovers in the sample, and the sample includes industrial, commercial, financial and property companies but excludes investment trusts. The average target in the sample has a market capitalization one month before the event date of £39.5m while the average acquirer is a little over six times bigger at £244m. Returns are reported for up to three years post-takeover. Attrition amongst survivors means that there is a reducing sample the longer the holding period. For instance, 776 acquirers have continuous stock price records for 24 months after completion. The main cause of attrition is takeover. Of the 54 sample firms that do not survive a full two years after completion, 47 were themselves acquired. Data on key dates were collected from the Financial Times (FT) and Extel cards. The announcement date is the date when the FT first reports the bid and proxies the date that information about a bid becomes public. The bid date recorded on Extel is the date on which the acquirer first makes a formal bid for the target. The event date is taken to be the earlier of the announcement and bid dates. The completion date is the date on which the offer becomes unconditional, and is also collected from Extel. Data were collected from the financial press on the hostility of takeovers in the sample, defining a hostile takeover as one in which the first bid was rejected by the target management. This is a widely used criterion and it can be readily identified from publicly available data. [8] Around 15% of the sample are hostile on this criterion. Hostile takeovers are larger than the average for the sample, and hostile acquirers are around four times the size of their targets. It is well-known that cash bids attract higher bid premia and we have access to data on

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[7] We are grateful to an anonymous reviewer for pointing this out.

[8] But it has Limitations. For instance, we always equate rejection with hostility, whereas target management might be indulging in a courtship ritual designed to improve the terms of the bid. On the other hand a bid can appear friendly without being so if the management agrees to a takeover because the alternative is a hostile bid (Hart, 1987).

means of payment for a subset of the sample (252 takeovers). Following Higson (1991), we identify cash financed takeovers when at least 90% of the consideration is cash and equity financed when at least 90% is equity. The proportion of hostile takeovers is around 15% for both cash and equity financing.

3.1.   *Announcement period returns for sample firms*

To position this sample relative to the existing literature, we calculate announcement period abnormal returns. Table 1 reports announcement period abnormal returns for the whole sample, and for the large 100 takeovers, which is the largest 100 of those targets with a market capitalisation at least 25% of their acquirer's, one month prebid. These are computed against the size-decile benchmark, from the beginning of the month in which the announcement takes place, to the end of the takeover completion month, when uncertainty about the success of the bid is finally resolved. Announcement periods vary in length: 40% of the takeovers are completed within one month after the announcement month, and 90% within three months. Table 1 also shows how returns evolve month by month during the announcement month and the next three months. Neither for the whole sample nor the large 100 are acquirer announcement returns significantly different from zero. Overall, targets earn an (equal-weighted) average announcement period return of 37.5%. This result is driven by smaller takeovers. The value-weighted target announcement period return is 33.16%, and it is 30.88%, equal-weighted, for the large 100 targets. [9] While there is little significant action for acquirers after the bid month, as a result of bid revisions, targets continue to accrue positive abnormal returns through the announcement period. These announcement returns are very similar to those reported in other studies.

We compute, but do not report, announcement period returns for hostile and friendly takeovers. In both cases, equal-weighted bidder returns are not significantly different from zero, but target returns are higher in hostile than in friendly takeovers, on an equal-weighted and a value-weighted basis. We also compute returns against the Financial Times Actuaries (ETA), which is a value-weighted index. Over the relatively short interval of the announcement period these are similar to the size-decile returns.

There is little consensus on when to start measuring announcement period returns, as evidenced by the great variety of practice in published work. Returns were also computed but are not reported, starting at the announcement day and using daily stock price data. However there is spurious precision in this if there is leakage of information before the first mention in the financial press. On the other hand there is evidence that bids follow positive movements in the acquirer's stock price, with the danger that starting the measurement period arbitrarily early will

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[9] Limmack (1991) studies all bids (completed and abandoned) involving UK quoted companies from 1977 to 1986. Cumulative abnormal returns for completed bids for the period from the beginning of bid months to the end of the completion month are 31.38% for targets and -0.2% for bidders.

Table 1

Announcement period abnormal returns[a]

Panel A: Complete sample

	Announcement Period		Bid month		Bid month +1		Bid month +2		Bid month +3	
	Acquirer (830)	Target (830	Acquirer (830)	Target (830)	Acquirer (830)	Target (815)	Acquirer (494)	Target (494)	Acquirer (177)	Target (177)
Abnormal returns (%)	0.43	37.50	0.20	31.50	0.11	3.27	0.54	1.08	-0.32	-0.24
Standard error	0.6	1.4***	0.4	1.2***	0.3	0.8***	0.4	0.5**	0.6	0.7
Percentage Positive	46.27	87.71								
Z statistic	0.86	24.87***								
Value-weighted returns (%)	1.27	33.16***								

Panel B: Large 100

	Announcement period		Bid month		Bid month + 1		Bid month + 2		Bid month + 3	
	Acquirer (100)	Target (100)	Aquirer (100)	Target (100)	Acquirer (97)	Target (97)	Acquirer (61)	Target (61)	Acquirer (20)	Target (20)
Abnormal returns (%)	0.02	30.88	-1.70	26.09	0.11	0.93	1.96	3.23	0.92	1.41
Standard error	1.7	3.0***	1.0*	2.6***	0.8	0.8	1.2*	1.0***	1.7	0.7*
Percent positive	40.00	91.00								
Z Statistic	0.85	9.21***								
Value-weighted returns (%)	0.88	32.76***								

[a]The table describes the abnormal returns to acquirers in UK takeovers during the period from the beginning of the announcement month to the end of the completion month, and separately for each of the bid month and the subsequent three months. Equal-weighted abnormal returns are shown for the complete sample (panel A), aand the large 100 takeovers (panel B). Value-weighted abnormal returns are also reported. Abnormal returns are measured against the size decile benchmark. The cross-sectional standard errors are reported, also the percentage of positive abnormal returns, and the Z-statistics and the level of significance. Levels of statistical significance are denoted by ***1%,; **5%; *10%

Harris (1989) study 1900 successful UK takeovers (1955—1985) and show abnormal returns in the bid month of 23.3% to targets and 1.0% to acquirers, but for the six months, bid - 4 to bid + 1, find abnormal returns of 29.7% and 7.9%.

4. Results

4. 1. Post-takeover returns for the full sample

Table 2 reports post-takeover abnormal returns, measured as the excess of the buy-and-hold return to the bidder over its size-decile benchmark. Abnormal returns are equal-weighted and measured over holding periods of one, two and three years after completion. Table 2 shows both the arithmetic mean of the abnormal returns, and the percentage that are positive. Over the 36 months after takeover completion there is no evidence of significant abnormal stock price performance. 776 of the sample survive for 24 months following takeover completion. These takeovers earn a negative abnormal return of -1.14%, which is not significantly different from zero, and 42.65% show positive abnormal returns, which is not significantly different from the expected proportion of 44.73%. 722 firms survive 36 months; they earn an abnormal return of + 0.83% over the period, and 42.94% show positive returns.

Table 2
Abnormal returns in the three years after takeover to the complete sample[a]

	12 months +l to +12 (814)	24 months +l to + 24 (776)	36 months +l to + 36 (722)
Abnormal returns (%)	-0.74	-1.14	0.83
Standard error	1.3	2.3	4.1
Percent positive	47.30	42.65	42.94
Z statistic	1.44	1.13	0.93
Value-weighted abnormal returns (%)	1.51	6.88 **	12.00 **
Standard error	2.19	3.22	5.07

[a]This table reports post-takeover abnormal returns. Abnormal returns are the difference between the return to the investor who buys the acquirer stock at the end of the unconditional month and holds it for 1 2 months. 24 months or 36 months, taking an equivalent short position in the size decile benchmark. Abnormal returns are equal-weighted: value-weighted abnormal returns are also reported. The cross-sectional standard errors are reported, also the percentage of positive abnormal returns and their Z-statistics. Levels of statistical significance are denoted by *** 1%; ** *5%*; * 10%

4.2 The relationship between size and abnormal returns

The equal-weighted abnormal returns reported above will not fairly reflect the porftolio opportunities available to investors if there is a systematic tendency for large takeovers to earn higher post-takeover abnormal returns than small takeovers. Many of the targets in the sample are absolutely small and small relative to their

acquirer. Small takeovers also raise problems of interpretation. The smaller the target the less discernible impact it is likely to have on the acquirer and the less visible it is to the market. Furthermore there is a data pollution problem with small takeovers. This, and the greater economic importance of large firms, makes it interesting to examine the returns to takeovers where the targets are both large, and large *relative* to their acquirer. Table 3 reports equal-weighted abnormal returns for the 'large 100' takeovers, which are the largest 100 targets that are at least one quarter the size of their acquirer in terms of market capitalization one month pre-bid.

The large 100 takeovers show a 24-month abnormal return of +1.33%, and a 36-month return of +4.61%, neither of which are significant. 44% of the large 100 takeovers show positive abnormal returns over the two years after takeover, and 48.4% over three years. So within an equal-weighted subset of relatively large takeovers, post-takeover returns are not significantly different from zero.

Table 2 also shows value-weighted abnormal returns, weighted by the market capitalization of the acquiring company on completion. Value-weighted abnormal returns are +1.5% over the first year, +6.88% over 24 months and +12.00% over 36 months. These two and three year abnormal returns are significant, at 5%. However, the value-weighted results are in large part driven by a few very large takeovers. For example, if we exclude the seven takeovers [10] that have a target market capitalisation exceeding £500m, that is, approximately the largest one percent in the sample, the 24-month value-weighted abnormal return falls to 3.32%. In summary, there is evidence of positive post-takeover abnormal return in a value-weighted portfolio. But this is not present in the subset of relatively large takeovers and appears to be generated by the post-takeover returns to a few very large takeovers.

Table 3
Abnormal returns in the three years after takeover to the large 100 [a]

	12 months +1 to +12 (100)	24 months +1 to +24 (100)	36 months +1 to +36 (95)
Abnormal returns (%)	-2.28	1.33	4.61
Standard error	2.9	5.2	7.1
Percent positive	47.00	44.00	48.40
Z Statistic	0.36	0.05	0.62
Value-weighted abnormal returns (%)	1.47	7.27	20.79**
Standard error	3.7	5.61	9

[a]This table reports post-takeover abnormal returns on the same basis as Table 2, for the large 100 takeovers.

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[10] These are BAT / Easile Star; Dailv Mirror Trust / Associated Newspaper Holdings; BP / Britoil; Guinness / Distillers; Hanson / Imperial Group; Hanson / Consolidated Gold Fields; Coats Viyella / Coats Paton.

4.3. Survivorship bias

If some acquirers subsequently become targets themselves and are acquired at a premium within the holding period, then a survivorship requirement that excludes these stocks from the sample will lead to understating the post-takeover return that can be expected from investing in acquirers (Mitchell and Lehn, 1990). Examination of the returns to the non-survivors from the sample supports this view. To illustrate, consider the two year holding period. There are 776 companies from the original 830 with a full 24 months of data post-completion. 47 of the 54 non-survivors were themselves taken-over. The equal-weighted abnormal return for the 54 non-survivors, from completion date to delisting, is +12.36%, which is significantly greater than zero at the 10% level. However there are not enough of these non-survivors to significantly bias the overall result. If the overall equal-weighted abnormal return for the sample is recomputed to include non-survivors, using their achieved return up to the date of delisting and the benchmark return thereafter, this raises the overall post-takeover return from -1.14%, to -0.3%. In the case of the three year period there are 108 non-survivors with a +18.48% return (significant at the 5% level) from completion to delisting. When these 108 non-survivors are included in the three year equal-weighted return, the equal-weighted return increases from +0.8% to +3.1%, which is not statistically significant at the 10% level.

4.4. Post-takeover performance through time

There appears to be no evidence of significant abnormal post-takeover performance in an equal-weighted portfolio of UK acquirers over the period 1975-1990.

Table 4

24.month post-takeover returns, year by year[a]

Year	No.		Year	No.	
1975	39	-13.51%	1983	38	28.44%
1976	60	-10.96%	1984	63	24.96%**
1977	72	-8.66%	1985	49	-2.84%
1978	49	16.30%**	1986	82	-4.00%
1979	50	-0.58%	1987	68	-9.35%**
1980	35	-11.41%	1988	57	-
1981	30	29.09%**	1989	39	13.42%***
1982	25	22.85%	1990	20	

[a]This table shows the equal-weighted abnormal return and the cross-sectional standard error for the 24 months after the end of the unconditional month for takeovers completed in each year from 1975 to 1990.

Table 4 disaggregates the sample into years and reports an equal-weighted, 24-month post-takeover abnormal return for takeovers consummated in each of the

sixteen years 1975-1990. We do this to reveal evidence of event-date clustering, and also because there may be sustained periods of positive and negative returns within the aggregate (Agrawal et al.). Table 4 shows that, though the sample is well dispersed through time, positive and negative returns are not evenly dispersed through time. For the four years, 1981 to 1984, 24-month post-takeover returns are strongly positive and average around 20%. In all other years, with a minor exception in 1989, average post-takeover returns are negative. [11]

Table 5
The evolution of returns through time

	1975-1980 (305)	1981-1984 (156)	1985-1990 (315)
Panel A: Size decile			
Abnormal returns (%)	-9.95	26.26	-6.18
Standard error	3.8[c]	6.4[b]	2.7
Percent positive	38.36	56.41	40.00
Z statistic	1.72*	3.33***	2.37**
Value-weighted abnormal returns (%)	1.59	30.16[c]	2.45
Panel B: FTA			
Abnormal returns (%)	6.20	18.71	-16.41
Standard error	3.9	6.4[c]	3.0[b]
Percent positive	50.16	51.92	32.38
Z statistic	2.32**	2.20**	5.08***
Value-weighted	-4.13	17.81	-8.47[b]

[a]This table partitions the post-takeover abnormal returns to acquirers into three sub-periods: 1975-80; 1981-84; 1985-90. Abnormal returns are measured against the size decile benchmark and the FTA benchmark and their cross-sectional standard errors and levels of significance are also recorded.
[b]Significant at 1% level, using Bonferroni adjustment.
[c]Significant at 5% level, using Bonferroni adjustment.

Based on the evidence of Table 4, equal-weighted abnormal returns are formed for three sub-periods: 1975-1980, 1981-1984, and 1985-1990 (Table -5). These sub-groups are formed on the basis of multiple comparisons rather that prior theory, so conventionally measured significance levels could be exaggerated. Accordingly, the significance levels for the *t*-statistics in Table 5 are adjusted using the Bonferroni method. [12] For takeovers occurring between 1975 and 1980 the subsequent 24-month abnormal return was -9.95%, which is significantly different from zero at the 5% level, and 38.36% were positive against the expected 43.40%. From 1985 to 1990, the abnormal return is -6.18% with 40.0% positive against an expected

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[11] 24-month returns were chosen for illustrative purposes. The profile is much the same using 36-month returns.
[12] See Darlington (1990) for a good discussion of this.

46.82%. However, between 1981 and 1984 the average abnormal return was +26.26%, significant at 1%, and 56.41% were positive against an expected 42.90%. The 156 takeovers occurring during this four year period account for 20% of the sample, but their post-takeover returns are sufficiently large to generate an overall equal-weighted average for the whole period from 1975 to 1990, which is not significantly different from zero. Again, value-weighted returns are somewhat higher than equal-weighted. On a value-weighted basis, returns are not significantly different from zero in the first and third periods, but are +30.16% for the 1981-1984 period.

Examination of the sample data suggests that the period 1981 through 1984 is not characterised by either size or industry clustering. The post-takeover abnormal returns reported by Agrawal et al. (1992) in the US are overall lower than those reported here, so that on average those authors report negative abnormal returns for the US. Also the period of strong positive return occurs three or four years earlier. But the similarity in the profiles of post-takeover abnormal returns in the two economies is intriguing and merits further research.

4.5. Size-decile versus conventional benchmarks

Though acquirers are typically six to seven times larger than their targets, not all acquirers are large capitalisation stocks. Hence it is more pertinent to measure abnormal return against a benchmark that controls for firm size, rather than a conventional value-weighted benchmark. However the direction of the bias induced by a mis-specified benchmark is rather sensitive to the sample period and over the sixteen year period of this study the choice of benchmark appears to make little difference. Whereas the overall two year abnormal return measured against a size decile benchmark was -1.14%, against the UK FTA the average abnormal return is ---0.46%. But this masks significant differences between returns measured against the two benchmarks within sub-periods. The sub-period structure used in the previous section is adequate to demonstrate this. During the period 1975-1980 there are post-takeover abnormal returns of -9.95% against the size decile benchmark but +6.20% against the FTA. In the period 1985-1990 abnormal returns are -16.41 % against the FTA, compared to -6.18% against the size decile. This reversal is caused by the inversion of the size premium that occurred in the UK in the late eighties. In the earlier years there was a conventionally negative relationship between firm size and returns in the UK. Accordingly the FTA, which is a value-weighted index dominated by the largest market capitalisation stocks, flatters the performance of acquirers. But in the late-eighties the largest stocks outperformed other stocks and in this period the FTA provides an excessively demanding benchmark for acquirer performance. The inversion of the size premium was short-lived but it was influential in terms of the measurement of post-takeover returns because it closely followed the merger wave of the mid to late-eighties.

4.6. The influence of non-size factors on returns

In Franks et al. (1991) abnormal returns disappear when measured against a multi-factor benchmark containing proxies for size, past returns and dividend yield. Though size may be driving this result, the authors do not disclose individual factor loadings. We now test if post-takeover returns are generated by dividend yield or past returns in the UK.

To investigate whether post-takeover returns are associated with acquirer dividend-yields, two tests are undertaken. First, a correlation coefficient is calculated between the acquirers dividend-yield 12 months pre-bid and post-takeover abnormal returns measured over 12, 24 and 36 months. Post-takeover abnormal returns are effectively uncorrelated with dividend yields; the 24-months coefficient, for instance, is 0.026. As a second test, all firms on LSPD are ranked by dividend-yield on January 1st each year and split into dividend-yield deciles. The sample is allocated to deciles on the basis of the acquirer's dividend-yield twelve months pre-bid. The sample is fairly uniformly distributed across the dividend-yield deciles. Thus, there is no evidence in this sample of a significant relationship between post-takeover returns and dividend-yields.

Recent studies suggest that although over relatively long periods contrarian investment strategies yield profits, relative strength portfolios may be profitable over short horizons. The existence of patterns in stock returns could generate spurious post-takeover abnormal performance if, say, takeovers tend to follow a period of positive acquirer stock performance. In DeBondt and Thaler (1985, 1987), an arbitrage portfolio that purchases losers and sells winners short on the basis of performance over the past three years is profitable over the following three to five years. In Jecadeesh and Titman (1993), relative strength strategies are profitable over shorter-horizons. Using CRSP daily returns for 1965 to 1989, a zero cost strategy that selects on the basis of the previous 12 months and holds for 3 months generates returns of 1.31% per month. Campbell and Limmack (1993) report similar results for the UK over the period 1979 to 1990, which covers much of the period of the present study. They construct winner and loser portfolios based on a 12-month formation period and 3-month and 11-month holding periods. The loser portfolios experience significant losses in the holding period (-1.1% for 3 months and -3.5% for 12 months) and winner portfolios experience significant gains (3.7% and +6.6%).

We investigate the returns structure of the takeover sample by testing a number of shorter-term investment strategies. We correlate abnormal returns measured over 6 and 12 months post-takeover with acquirer abnormal returns over various earlier portfolio formation periods. This is done both for the aggregate, and for the sample partitioned into 'winners' and 'losers' depending on whether the acquirer had positive or negative abnormal returns in the formation period.

Table 6

Portfolio correlations and gains and losses to winner / loser investment strategies[a]

	Post-takeover holding period	
	6 months	12 months
Panel A: portfolios bases on whole sample		
Portfolio formation period	Correlation coefficients	
Announcement period	-0.004	0.055
6 months before bid announcement	0.050	0.087**
Panel B: Portfolios based on winners and losers		
	Correlation coefficients	
Announcement period		
Winners (362)	-0.085	-0.057
Losers (414)	0.054	0.148***
6 months before bid announcement		
Winners (448)	-0.019	0.049
Losers (328)	0.217***	0.158***
Panel C: Portfolios based on winners and losers		
	Equal-weighted abnormal returns	
Announcement period		
Winners (448)	1.74%	1.71%
Losers (328)	-1.52%	-3.72%
Panel D: Portfolios based on non survivors		
	Correlation coefficients	
Announcement period (54)	0.054	0.033
6 months before bid announcement	-0.049	-0.096

[a]Panel A shows the correlations between the abnormal returns generated in the portfolio formation periods (the announcement period, and the six months prior to the bid announcement month) with the abnormal returns generated in the holding period (the 6 months and 12 months after the end of the unconditional month). Panel B partitions by winners (where the abnormal returns ≥ 0 in the formation period) and losers (where the abnormal returns < 0 in the formation period). Panel C shows abnormal returns for winners and losers post-takeover. Panel D shows the correlations for non-survivors.

Table 6 reports correlations for abnormal returns in the 6-month and 12-month post-takeover horizons, [13] with abnormal returns in two formation periods, the announcement period and the period 6 months prebid. Overall there is no significant relationship between the announcement period, or the 6-months prebid, and 6-

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[13] There are no significant correlation between returns in these formation periods and post-takeover returns beyond 12 months.

month post-takeover returns (Panel A). There is a significant (at 5%) positive correlation between returns in the period 6 months prebid and 1-month post-takeover abnormal returns. However a decomposition into winners and losers is revealing (Panel B). There is no significant correlation between the abnormal returns to winners in either of the formation periods and winner returns in the post-takeover holding periods. However there is a strong positive correlation for losers, between abnormal returns 6 months prebid and both 6- and 12-month post-takeover returns, and between announcement period returns and 12-month post-takeover returns. So using a correlation test, there is no evidence that winners win, but some evidence that losers lose. We also calculate the abnormal gain or loss to the investor who forms (equal-weighted) portfolios of winners and losers and holds them through these holding periods. Panel C reports these gains based on the same formation and holding periods. Winners in both formation periods, 6 months probed and the announcement period, earn positive returns and losers earn negative returns. These returns are small, with only the 6-month prebid / 12-month holding period returns significant, and then only at 10%. Hence, to an extent, the takeover sample mimics the population in terms of correlation in returns. Since there are fairly similar numbers of 'winners' and 'losers' in this sample, the likely impact of serial correlation on the direction of post-takeover returns is not significantly different from zero.

4.7. An equal-weighted portfolio strategy in calender time

We examine post-takeover abnormal returns in calendar-time by modelling a portfolio strategy that buys the stock of acquiring firms on completion and holds it for three years. Beginning in 1976 [14] the investor buys stock in each acquirer in the sample at the end of the takeover completion month and simultaneously shorts the benchmark. The investor holds the stock and the corresponding short position in the benchmark for 36 months or until delisting, reinvesting all dividends and .sale proceeds. The portfolio is rebalanced monthly to maintain an equal-value investment in all acquirers currently in the portfolio, with corresponding adjustments to the short position. [15]

A calendar-time portfolio of this sort can hardly be said to describe a realistic investment strategy. Acquirers are equal-weighted in the portfolio, and the strategy would generate considerable transactions costs. Moreover the size of the fund does not respond to the level of takeover activity. But the returns to this strategy provide a graphic reinforcement of the event-time results, and show particularly clearly the-effect of the benchmark choice, and the shifts in post-takeover returns through time.

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[14] We begin in January 1976 as prior to that there are relatively very few acquisitions, and the sample peaks at 235 in October 1987.

[15] Franks et al. (1991) examine a similar calendar-time portfolio strategy.

Fig. 1 plots the cumulative return to two strategies, one that benchmarks against the size decile, and the other using the FTA which is a value-weighted index benchmark. Portfolio returns against the size-decile benchmark are negative in the seventies, but are positive in the early eighties so that by 1985 the strategy is breaking even. The event-time analysis reveals the strong post-takeover performance of takeovers announced between 1980 and 1984. These still deliver positive returns to the calendar-time strategy through 1986 but after that, returns plateau then turn down. By 1993 the strategy has yielded a return of about zero over the seventeen years since 1976.

The returns to the FTA strategy graphically reflect the reversal in the size effect in the late eighties. Through to 1988, buying and holding acquirers generated a positive return against the FTA, but in the late eighties the strong performance of the FTA renders this strategy unprofitable.
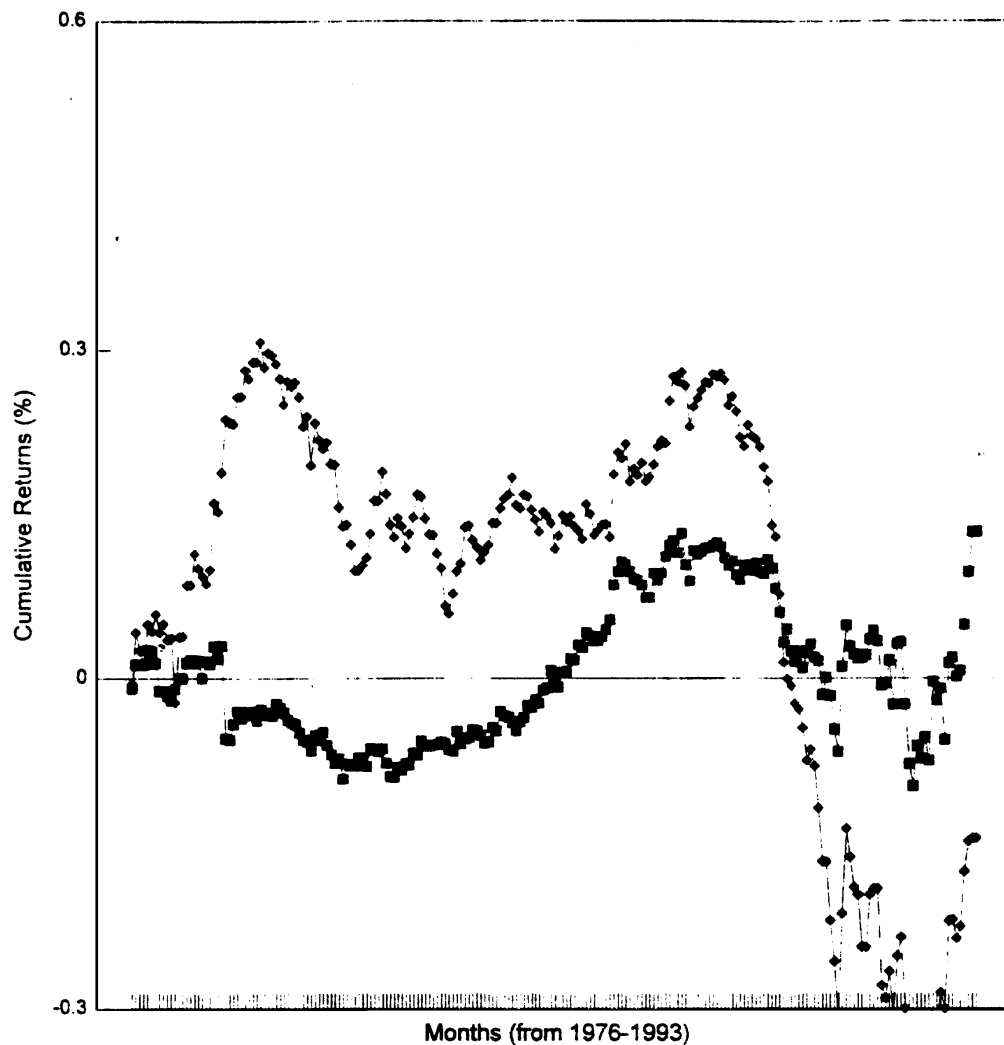

Fig. 1. Cumulative portfolio returns in calendar time. This graph shows the portfolio cumulative returns for the equal-weighted portfolio of acquirers, where returns are measured against a size decile and FTA benchmark.

■ ■ ■ ■: cumulative returns (v size decile); ◆ ◆ ◆ ◆: cumulative returns (v FTA).

4.8. Returns to hostile takeovers

The hostile targets in the sample show announcement period abnormal returns of 42.7% against 36.6% for friendly. This is consistent with other studies which show that targets in hostile takeovers receive higher bid premia (Franks and Harris, 1991; Servaes, 1991; Morck et al., 1987). Franks et al. attribute these hostile premia to anticipated performance gains rather than to the correction of underperformance, so it is of interest to see whether announcement period returns to hostile takeovers are subsequently corrected. US studies report higher announcement period returns and higher post-takeover returns in tenders than in mergers (Bradley et al., 1988; Lang et al., 1989; Agrawal et al., 1992; Franks and Harris, 1989; Servaes, 1991). There is no direct analogy to the merger / tender distinction in the UK, but since mergers are more likely to be friendly and are more likely equity-financed, related issues are whether the takeover is friendly of hostile, and whether it is cash or equity financed.

Hostile takeover comprise 15% of the sample. Hostile targets tend to be larger than friendly targets and large relative to acquirers, so 40% of the large 100 takeovers are hostile. Hostile takeovers show significant positive post-takeover returns of +12.80% over 24 months, significant at 5%, compared to -1.14% for the complete sample and +1.33% for the largest 100 targets. 49.18% of the hostile acquirers have positive post-takeover returns. This contrasts with friendly takeovers, which show losses of -3.74% and a percent positive of 41.44%. Hence though hostile takeovers show higher announcement period returns than friendly takeovers, they also enjoy positive returns post-takeover, and there is no evidence of Higson (1991) the market subsequently correcting expectations formed during the announcement period. [16]

5. Conclusion

This study brings new evidence on the contentious issue of the value-added by takeovers. If investors experience systematically negative abnormal returns after the completion of takeovers, as a number of previous studies have claimed, this points to market mispricing on takeover announcement and suggests we should downgrade our beliefs about the value-added by takeovers.

Abnormal returns are measured for a near-exhaustive sample of takeovers between UK quoted companies over the 16-year period 1975-1990. Abnormal return is the difference between the return to buying and holding the acquirer's stock at completion and the return to a benchmark portfolio of stocks of the same

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[16] For a subset of 252 takeovers data are available on means of payment (from Higson. 1991). Although equity financing is the predominant means of payment in the sample (197 takeovers) the post-takeover returns for equity financed takeovers are much worse than for cash-financed takeovers. The equity financed takeovers shows significant HPAR losses of -15.54% and 37.6 percent are positive whilst the cash financed takeovers shows significant positive abnormal returns of +12.78% and 60 percent are positive.

size as the acquirer. There is no evidence of negative abnormal stock returns during the 36 months after takeover completion. Both for the full sample and for a subset of 100 relatively large takeovers, equal-weighted abnormal returns are not significantly different from zero. An investor with a value-weighted portfolio strategy earns small positive returns, mainly due to a few very large takeovers.

Non-surviving acquirers are mostly firms that have themselves been subsequently acquired at a premium (Mitchell and Lehn, 1990). As a group, non-survivors earn significant post-takeover returns, but there are not enough of them to shift the conclusion. Adding non-survivors to the survivor sample increases the equal-weighted post-takeover abnormal return, but it remains not significantly different from zero.

We benchmark takeover returns against size-decile returns. Though there were large differences in the UK in the stock returns between firms of different sizes, between 1975 and 1990 this relation was not unidirectional, reducing the apparent impact of the choice of benchmark. There is no evidence that post-takeover abnormal returns are systematically related to dividend-yield, and past returns factors.

Though we cannot reject the null of zero abnormal returns after takeover completion, conclusions about post-takeover returns are sensitive to the sample period. Whilst we find zero abnormal performance overall, on an equal-weighted basis takeovers in the period 1981 to 1984 Generated abnormal returns of 26% during, the 24 months after completion, whilst the remaining years show negative returns. On a value-weighted basis post-takeover abnormal returns are not significantly different from zero in most years, and are even more strongly positive in the early-eighties. This profile of returns is rather similar to that reported by Agrawal et al. (1992) in the US, reducing the likelihood that it is merely an artefact of data snooping, and suggesting, a profitable area for further research. The positive post-takeover performance of the early-eighties in the UK was not evidently associated with either size or industry clustering. But there is some association between abnormal returns and market conditions. Whereas the post-takeover period for takeovers consummated in 1981 through 1984 was the period of mid eighties boom, the post-takeover period for the earlier group embraced the deep recession of the late seventies and early eighties, and for the 1985-1990 group coincided with the recession of the late eighties and early nineties. The inconstancy of measured post-takeover abnormal returns should provide further caution against rejecting the null of zero abnormal returns on the basis of studies conducted over limited time periods.

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