EFFECTS OF MERGERS AND ACQUISITIONS TO SHAREHOLDERS' WEALTH: EVIDENCE FROM UNITED KINGDOM*

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Abstract: This paper sets out to empirically analyse the impact of mergers and acquisitions on shareholders returns. It uses the U.K. data for 60 companies that were involved in takeovers in the period between 1992-95. The paper assesses stock market response to the announcement of takeover bids for these randomly chosen successful bids in order to establish whether or not it is indicative of gains from mergers. The study finds that there are significant abnormal returns earned by shareholders of the target firms on the month the merger is announced. In contrast, the returns earned by stockholders of the bidding firms were found to be modest. Regarding the post-event study for bidding firms, given the predominant paradigm in finance (i.e., capital market efficiency), the study shows that takeovers have some impact on the stockholders wealth. The paper argues however that despite such negative returns, there no necessary implications of market inefficiency based on the speed with which the information about merger is impounded in the share prices of the bidders.

INTRODUCTION

In principle, mergers and acquisitions (M and A) involve two companies combining together to form one bigger company than the original ones i.e., the bidder and the target. Many studies have shown that mergers and acquisitions are a major activity within business in many countries and are said to provide significant component of growth for many firms in countries such as the US and the UK (Firth, 1980; and Franks and Harris, 1989). Surely there must be some motives for the management of one firm to get involved in a takeover bid. According to Firth (1980) there are two major theories of the firm that may help explain why companies' management engage in M and A.

These two theories are profit maximisation and maximisation of management utility. These studies argue that companies involved in M and A realise some gains, which lead to increase in profitability. For example, the first theory tends to explain the profitability from takeover to come through synergy as explained by economic gains, through the increased market power, or through removal of inefficiencies in the target firm by injecting superior management.[1]

Mergers and acquisitions of firms in the same industry are therefore justified in terms of the opportunities such developments create for the exploitation of economies of scale. For instance, in many industries costs fall with the size of the plant being employed. Instead of accessing such economies of scale by constructing larger plants, firms find it more feasible to attain such benefits through mergers and acquisitions. Also mergers between firms supplying the same market will increase the level of concentration and the market power of the firms involved, thereby creating monopoly rent. In such cases, value may be created for shareholders at the expenses of the consumers.

The second theory holds that beyond achieving a certain satisfactory level of profits, managers will attempt to maximise their own self-interests, and these do not necessarily correspond to maximising shareholders wealth (Firth, 1980). Jensen and Ruback (1983) show that overall corporate takeovers generate positive gains, that target firm shareholders benefit, and that bidding firm shareholders do not lose. However, Roll (1986) argues that managers of bidding firms are infected by hubris, and so overpay for targets because they overestimate their own ability to run them. This implies that managers of bidding firms pursue personal objectives other than maximisation of shareholders value. He further argues that takeover gains may have been overestimated if they exist at all; and that if there really are no aggregate gains associated with takeovers, or if they are small, it is not hard to understand why their sources are "elusive." Above all, it is not

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1 This is debatable however, as there are other ways an old and inefficient management can be replaced; eg sacking the whole team.

clear how one can identify which of these reasons is the major influence in motivating an individual takeover.

This paper assesses the U.K. stock market response to the announcement of takeover bids for thirty randomly chosen successful bids involving sixty firms and establishes whether or not it is indicative of gains from mergers. It therefore studies the event (i.e., announcement of takeover) by focusing on the behaviour of the share returns in order to test whether their stochastic behaviour is affected by the disclosure of this firms-specific event. The paper concentrates on both during and after the event effect.

The remainder of this paper is arranged as follows: section two reviews the literature on the subject matter and section three briefly discusses the hypotheses on whether there are any gains from takeover undertakings. While section four discusses the sample data, section five explains the methodology used in this study followed by empirical findings in section six. Finally section seven provides some concluding remarks.

LITERATURE REVIEW

Numerous studies have estimated the impact of M and A on the stock prices, and hence the return, of the bidder and target firms (see for example, Mandelker (1974), Dodd and Ruback (1977), Firth (1980), Jensen and Ruback (1983), Malatesta (1983), Caves (1989), and Franks and Harris (1989)). Such "event studies" use estimates of the abnormal return changes around the offer announcement date as a measure of economic effects of the takeover. Abnormal returns are measured by the difference between actual and expected stock returns. The expected stock return is measured conditional on the realised return on a market index to take account of the influence of market events on the returns of the individual securities. Most of these studies have found that there are abnormal returns earned by target companies around the event date. For example, Mandelker (1974), using the announcement date as effective date of merger finds that acquiring firms earn a normal rate of return from their acquisitions and that any gain from mergers accrues to shareholders of the acquired firms. He reports that shareholders of acquired firms earn abnormal positive returns over the seven months before the merger month. Mandelker findings are consistent with a perfectly competitive acquisitions market hypothesis, which claims that gains go to target firm's shareholders due to competition. They are also in support of efficient stock market hypothesis (semi-strong) that it is not possible to trade profitably on publicly available information.

In further empirical estimates of the stock market reaction, Dodd and Ruback (1977), finds that for the twelve months prior to the event stockholders of the bidding firms earn significant positive abnormal returns. They find, however, that for both bidding and target firms, there is no significant post-event market reaction. The study by Firth (1980) examined takeover activity in the United Kingdom and found that mergers and takeovers resulted in benefits to the acquired firm's shareholders and to the acquiring companies' managers, but that losses were suffered by the acquiring companies' shareholders. The results are consistent with the second theory about takeover motivation, which is maximisation of managerial utility rather than maximisation of shareholders returns. Jensen and Ruback (1983) found that corporate takeovers generate positive gains, that target firm shareholders benefit, and that shareholders of the bidding firm do not lose. However, they argue that the gains created by corporate takeovers do not appear to come from the creation of market power.

In their review of empirical evidence on shareholders wealth effects for over 1800 U.K., Frank and Harris (1989) find that around the merger announcement date targets gains 25 to 30 percent and bidders earn zero or modest gains. This is consistent to earlier findings by Jensen and Ruback (1983). Unlike Dodd and Ruback (1977), however, Frank and Harris (1989) find that post-merger share-price performance suggests that acquisitions follow favourable developments in bidders' equity prices but not for targets. The available empirical results indicate that the measured combined value has increased in some studies and decreases in others. In both cases however these studies suffer one bottleneck in that they cannot totally separate the performance that is due to merger from the performance due to other factors if effective date is used as the event. According to Rolls (1986), it has been statistically significant to none. Generally, measured changes in the prices of bidding firms

have been mixed in signs across studies and mostly of a very small order of magnitude. Several studies have reported them to be significantly negative, and other studies have reported the opposite. Some cases suggest that target firm prices consistently display large increases, especially when the initial bid is successful.

While most empirical studies on mergers focus on the impact of the information contents on the date surrounding the actual event, a few studies also look beyond this point. For example, Agrawal et al. (1992) and Gregory (1997) have focused on the long-term impact of mergers on the stock performance. Agrawal *et al.* based on U.S data find that the stockholders of acquiring firms suffer a statistically significant loss of about 10% over the five-year-post-merger period. Interestingly, their results suggest that neither the firm size effect nor beta estimation problems are the cause of post-merger negative returns. Their research suggests that acquisitions are wealth reducing events for the acquirer. This implies that the earlier findings of Franks and Harris (1989), are specific to the time period of that study (1955-1985). In a more recent study by Gregory (1997) finds that the post-takeover performance of U.K. companies is unambi-guously negative, on average, in the longer term. However, it is not easy based on this research to conclude different from Agrawal et al. (1992) as it might also be possible that the results holds only for the period of study (1984-1992).

HYPOTHESES OF THE EFFECTS OF *M* AND *A* ON SHARE RETURNS

Our concern is to estimate the effect of *M* and *A* on stockholders returns. This requires one to test whether or not companies earn any abnormal returns i.e., different from what is expected. In simple terms there are three possible effects on the shares in response to the information about the takeover. First, there might be a positive response implying that the market perceives gains from merger. Secondly, there might be a negative response signifying a negative perception by the market. Lastly, there could be no effect. To study these effects we use a more general form of the null and alternative hypotheses as follows:[2]

$$H_N : f(R_j \mid y_i) - f(R_j) = 0 \text{ for all } y_i$$
$$H_N : f(R_j \mid y_i) - f(R_j) \neq 0 \text{ for at least one } y_i \quad \ldots\ldots\ldots(1)$$

where:

R_j is the return on security j in an event period interest;

yi is a signal from information structure h announced in the event period that potentially affects security j (such as merger announcements in our case);

$f(R_j \mid y_i)$ is the distribution of R_j conditional on the information signal y_i from the information structure h;

$f(R_j)$ is the marginal distribution of R_j.

In equation (1) it is claimed that there is no abnormal return that is earned by stockholders of companies involved in *M&A*. This hypothesis implies that there are no net gains from altering the operations of the target or bidding firms. The empirical implications are that for successful bids the stockholders of both bidder and target firms earn normal returns from the takeover. The alternative hypothesis states that for a signal, y_i from an information system to posses information content, the distribution of the rate of return on the share conditional on the signal y_i should differ from the marginal distribution. This implies that the announcement of a corporate takeover releases positive information about the firms involved and that the stock prices of these firms will rise to reflect this new information. The empirical implication is that the target and/or bidding firm shareholders benefits from a takeover, but the hypothesis provides no prediction as to how the monopoly rents are split.

THE DATA

The data used in this study consisted of successful takeover bids for U.K. companies, which took place between 1992 and 1995. These monthly return data are calculated from share prices obtained from Datastream International, the company based in U.K. providing instant information about companies' prices listed with the London Stock Exchange.[3] The information

[2] These hypotheses are based on a study originally done by Gonodes (1975) as reprted by Strong (1992)

[1] The monthly stock market return is calculatedusing the following formula for continuous returns:

$$R_{j,t} = \ln\left(\frac{RI_{j,t}}{RI_{j,t-1}}\right)$$

where $Rj_{,t}$ is the return on share i in period ; $RIj_{,t}$ is this total monthly return index and $RIj_{,t-1}$ is last month total return index.

available for analysis consists of companies' prices for the period starting January 1989 to December 1998.

The FTSE (All- index) is used as our market index. From a set of these data we randomly choose thirty bidding companies as well as thirty corresponding targets, therefore making a sixty company sample of study, in order to assess the impact of the announcement of takeover bid on their prices. The event date is set at month zero for all companies and the "event window" lies between month 3 of both before and after the event date. To avoid contamination of the "news" in the share price we limit the event to 36 months before the actual event as defined by the event window. For post-event analysis we only consider 36 months after the merger and assess the impact on the bidders share prices.

THE METHODOLOGY

Measurement of Abnormal Performance

To assess the effects of mergers on share prices, the study used variations of the event-study methodology.[4] On the assumption that security returns are distributed multivariate normal, this study makes use of the market model.[5] The market model is a statistical model, which relates the return of any security to the return of the market portfolio and it is given as follows:

$$R_{jt}=\alpha_j+\beta_j R_{mt}+e_{jt} \qquad (2)$$

where: R_{jt} = Rate of return of security j over period t,

R_{mt} = Rate of return on a value weighted market portfolio over period t,

$\alpha_j = E(\bar{R}_j) - \beta_j E(\bar{R}_m)$,

e_{jt} = Distrubance term of security j at month t, and $E(e_{jt}) = 0$.

$$\beta = \frac{\text{covariance}(R_{jt}, R_{mt})}{\text{variance}(R_{mt})}$$

[4] See Fama *et al* (1969).

[5] The specification actually requires the asset weights in the market portfolio to remain constant. Empirically the fact that the weigts in the market change is unimportant.

It follows from equation (2) therefore that for any company j in moment t, we can define an abnormal return (AR) as the difference between the actual return and the expected return given the information about the takeover. This can be expressed as follows:

$$AR_t = R_{jt} - E(R_j) \qquad (3)$$

where,

$$E(R_j) = \alpha_j + E(R_{mt}). \qquad (4)$$

In this model, values for a and b are estimated by regressing R on R for 36 months beginning at t = -39. Company monthly average abnormal returns (AAR) are then calculated from equation (3) based on the following formula:

$$AAR_t = \frac{1}{N}\sum_{j=1}^{N} AR_{jt}, \qquad (5)$$

where, N is the number of firms which have abnormal returns in time, t.[6] These average abnormal returns are summed over event time (t = -39, -38,...,0,...,+39) to obtain cumulative average abnormal returns ($CAAR$).[7] The cumulative impact of the abnormal returns over time is calculated as

$$CAAR_{jt} = \sum_{t=x}^{y} AAR_t \qquad (6)$$

Equation (6) gives cumulative average abnormal returns over the period, month x to month y.

Statistical Test of Significance for AAR and $CAAR$

The average abnormal returns and cumulative average abnormal return are used to examine the impact of mergers and acquisitions on security returns. In order to see whether they are significantly different from zero, probability tests using the t- statistic were run. The statistical significance of average abnormal returns is assessed with the following statistic:

$$T_t = AAR_t / \sigma \qquad (7)$$

[6] The summary for these average abnormal returns and respective number of firms is given in appendix 1.

[7] Cumulative average abnormal returns are also provided in appendix 1.

Where s is the standard deviation of *AAR*'s (assumed to be normally distributed) for a period assumed to be unaffected by the merger.

In reported results, s is calculated for the 36-months period beginning at t = -39 with the following values: 1.84% and 2.06% for targets and bidders respectively. Given these procedures, T_t is distributed according to a standard t-distribution with 35 degree of freedom. The study also carried out the statistical significance of cumulative average abnormal returns with statistic, TC_t given below:

$$TC_t = {}^{CAAR_t}\!/_{\sigma\sqrt{\tau}} \qquad (8)$$

Where τ is the number of months involved in accumulating the average abnormal returns. For example, if one wants to test the statistical significance for the cumulative abnormal returns in the event window (i.e., –3,... ,0, ... ,+3) our t will be 7, and TC_t will be distributed according to a standard t-distribution with 6 degree of freedom.

For τ the post-event impact, the study only accumulates the average abnormal returns for the 36 months after the event and tests its with the same standard deviation as above. statistical significance by using equation (8). However, in this case *TC* s distributed according to a standard t-distribution with 35 degree of freedom.

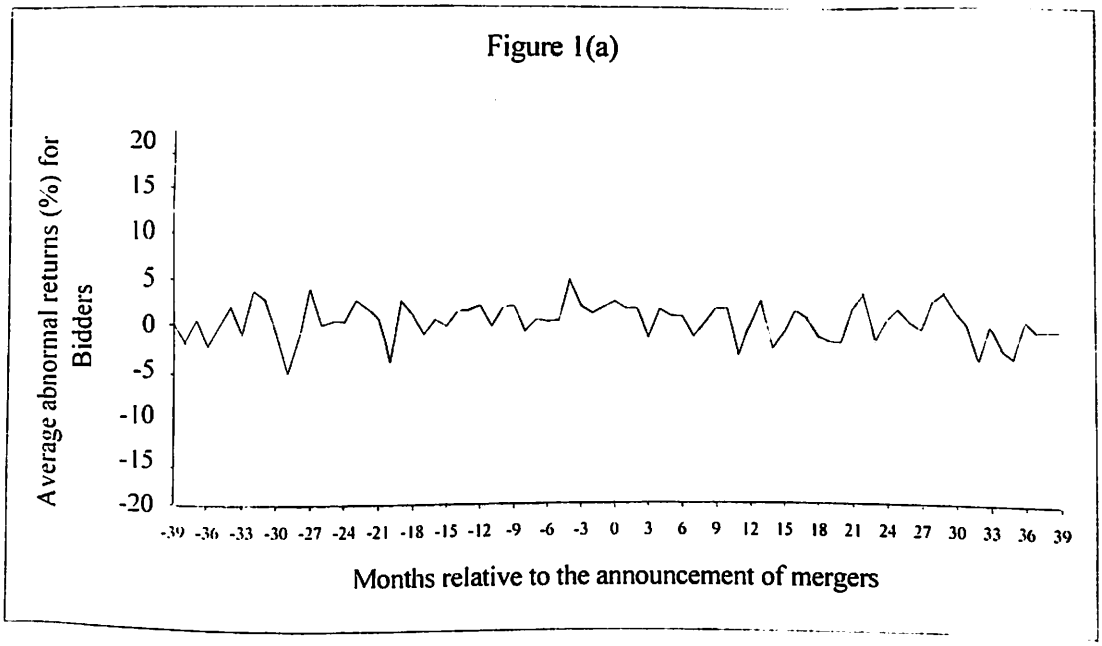
EMPIRICAL RESULTS

An Overview

The results of this study are summarised in figure 1 and 2. The monthly average abnormal returns are presented in panel (a) and (b) of figure 1 and cumulative average abnormal returns are presented in panel (a) and (b) of figure 2. They both provide a general description of the impact of mergers on the returns to shareholders of both bidding and target firms.

The monthly average abnormal returns plotted in figure 1 and reported in appendix I measure the abnormal returns to shareholders of these firms in each of 78 months surrounding the month of announcement of mergers. The returns are abnormal in the sense that they represent the average deviations of the monthly returns on these securities from their normal relationships with the market as depicted by the market model.

Figure 1(a): *Plots of average abnormal returns for the 78 months surrouning the month of event announcement of merger (month 0)*



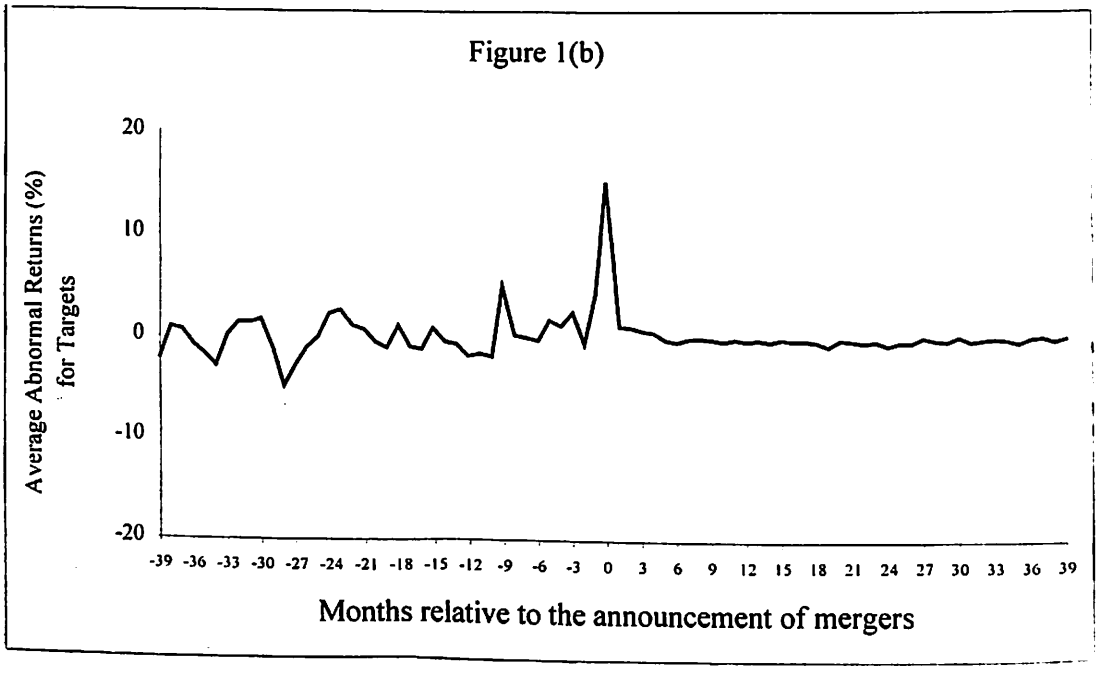


Figure 1(b): *Plots of average abnormal returns for the 78 months surrouning the month of event announcement of merger (month 0)*

Source: *DatastreamInternational,* U.K.

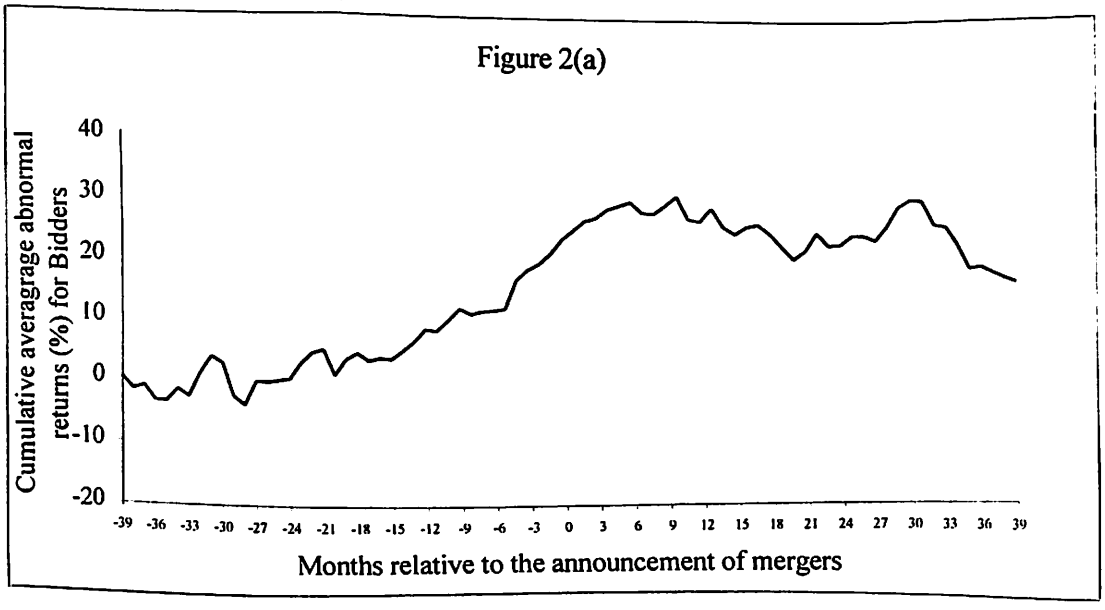
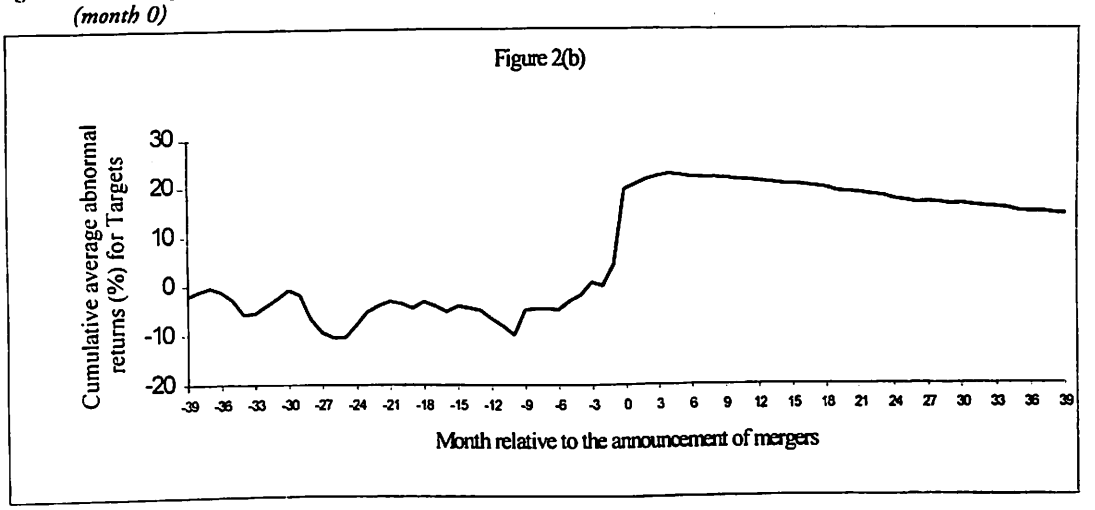


Figure 2 (a): *Plots of Cumulative average abnormal returns for 78 months surrounding the event of merger announcement (month 0)*

Source: *DatastreamInternational,* U.K.

Figure 2 (a): *Plots of Cumulative average abnormal returns for 78 months surrounding the event of merger announcement (month 0)*



Source: Datastream International, U.K.

Similarly, the cumulative average abnormal returns in figure 2 can be interpreted as an index of the total abnormal price changes from 36 months prior to the announcement of merger.

The most notable feature of these figures is the large positive average abnormal returns earned by shareholders of target companies in the month the bid are successful. This is indicative of positive perception of the "news" about the merger. The average abnormal returns for these shareholders in month zero is 15.21 ercent for targets. This position is shown at point zero in figure 1 (b) above and it is completely different in terms of magnitude from the other months in the event window. In contrast to the target firms, there is no striking evidence in figure 1 (a) of an average abnormal return of the similar magnitude for bidding firms in month zero or any other month. The returns are on average randomly fluctuating around zero.

The average abnormal returns in figure 1, both panel (a) and (b) represents the average abnormal returns of shareholders for one month holding only, and we are interested in the cumulative average abnormal returns for the sequences of months before and after the "event". These periods reported in figure 2 are divided as follows. The first period which starts from month negative 36 to negative 3 and that from negative 3 to month zero represents the pre-event performance. The second period which covers post-event performance begins at month 0 to month +39, with two sub-divisions i.e., between month zero and month +3 and then between month +3 and month +39. Month zero is the event period.

In the period before the event stockholders of bidding firms earn positive abnormal returns before the announcement of the merger as indicated by cumulative average abnormal returns in figure 2 (a), which goes from zero to 24.48 percent. There is an indication of some negative cumulative abnormal returns for bidding firms, specifically in month negative 28, followed by persistent positive returns through a sub-period starting at month negative 3 (the beginning of the event window). In contrast, the shareholders of the target firms appear to earn negative abnormal returns for the first part of the period starting from negative 39 to negative 3, when they start earning positive abnormal returns as indicated by figure 2 (b). There is a dramatic increase in the positive abnormal returns earned by these shareholders as the returns rise from 4.21 to 15.21 percent between month negative 1 and month zero.

The plots of the average abnormal returns (figure 1) and cumulative average abnormal return (figure 2) present an overall view of the abnormal returns to shareholders around the event date. They are, however, not sufficient to explaining in details about the impact of the event, such as M and A, exerts on the shareholders' returns. For a better analysis we

undergo in what follows a *t*-statistic to test whether or not the observed abnormal returns are significantly different from zero.

For the bidding firms post-event performance shows that the stockholders in these companies earn significant negative abnormal returns when accumulated. For our sample the cumulative abnormal returns was -10.99 percent. This is statistically significant when tested at both sizes 1% and 5% level of significance using a standard *t*-statistics. However, one of the major problems with the findings of post-merger negative returns for acquirers is that it tends to invalidate, or at least question, the assumption on which the event study methodology is itself based. For example, Gregory (1997), argue that by using security returns as the measure by which takeovers are judged we need to make assumptions about the information efficiency of the securities market and in particular about the speed of market reaction.

HYPOTHESES TESTING AND INTERPRETATION OF THE RESULTS

The implications of the null hypothesis in section 3.0 are that there are no net gains from altering the operations of the target or bidding firms and therefore stockholders of both bidder and target firms earn normal returns from the M and A. The empirical analysis in the above section shows however that this is not the case. In this sub-section we test how statistically significant the deviations of the returns are from the expected returns in the event month. Such tests are summarised in tables 1 and 2 below. Table 1 shows that at both sizes 5% and 1% level of significance, stockholders of the bidding firms earn normal returns. The calculated *t*-statistics for their abnormal returns lies in the "accept" region of our test procedure. This implies we should accept the null hypothesis, which says that there are no abnormal returns to the bidders due the announcement of takeovers. In contrast, the stockholders of the target firms earns significantly positive abnormal returns on the month of the event, and the statistical test clearly shows that by the large standard *t*-statistic at both sizes 5% and 1% level of significance. Therefore, the null hypothesis that the shareholders of the target firms make no abnormal returns is rejected. Interestingly, however, there are no more significant abnormal returns earned by these shareholders as suggested by figure 1 (b) in the month following the event month.

Table 1: *Calculated t-statistics for abnormal Returns**

Periods in months	Calculated t-statistic[8] for Bidders	Calculated t-statistics for Targets
-3	0.8604	1.3411
-2	0.4913	-0.3183
-1	0.8092	2.2894
0	1.1274	8.2693
1	0.7438	0.5946
2	0.7368	0.5252
3	0.2615	0.3495

* Standard *t*- statistics for 35 degree of freedom at size 5% and 1% are 2.0301 and 2.7238 respectively.
Source: Author's compilation

In table 2 shows that statistically the cumulative abnormal returns in the event window for targets are significantly different from zero. This implies that the null hypothesis in section 3.0 should be rejected in favour of the alternative hypothesis. However, returns for bidders are not significantly different from zero and therefore in this case the null is accepted.

*Table 2: Calculated t-statistics for cumulative abnormal Returns***

Period of Cumulating	Calculated *t*-statistics for Bidders[9]	Calculated *t*-statistics for Targets
Event Window	1.9013	4.9328
Post-event[10]	-0.8875	N/A

** Standard *t*- statistics for 6 degree of freedom at size 5% and 1% are 2.4469 and 3.7074 respectively.

Source: Author's compilation

The results in this study are similar to earlier and comprehensive studies such as Mandelker (1974), Dodd and Ruback (1977), Firth (1980), and Franks and Harris (1989). Both studies have shown that shareholders of the target firms earn, on average, significant positive abnormal returns in the month takeovers are concluded. For example, Franks and Harris found that

[8] The t-tests are calculated using equation 7.
[9] The t-tests are calculated using equation 8

around the merger announcement date targets gain 25 to 30% and bidders earn zeroor modest gains.In our study we find that slightly lower gain of 15 percent for targets and 2 percent for bidders were earned during month zero i.e., the month the announcement for merger was made. This small difference could be associated to the two important things. Firstly, the period with which the study by Frank and Harris covers (1955-1985), and secondly the size of the data in our sample. While the sample for their study seems to be much broad by covering 1,800 U.K. takeovers, this study has only randomly chosen sixty U.K. firms. Moreover, the period covered in our study is shorter (1992-95). Faith using the U.K. data showed that M&A resulted in benefits to the acquired firm's shareholders and to the acquiring companies' managers, but that the stockholders of the bidding firms suffered losses. His results are consistent with the idea that takeovers are in some cases motivated by maximisation of management utility rather than maximisation of shareholders wealth.

Our post-event results are inconsistent with some previous findings. For example, using U.K. data Limmack (1991) and Higson and Elliot (1993) show that long-run bidder returns are significantly negative. Agrawal et al. (1992) using U.S. data show that stockholders of acquiring firms suffer a statistically significant loss of about 10% over the five-year-post-merger period. In the U.K. Gregory (1997) show that the post-merger performance is unambiguously negative, on average, in the longer term. He argues that under all benchmarks used this conclusion is unaltered.[11] However, when discussing Gregory's paper Limmack (1997) concludes that the findings of negative post-bid returns for acquirers is not unambiguous and may be driven in part by choice of methodology or sample selection. We, in this study, find a loss of 10.99 % in cumulative basis for the three-year-post-merger period. These results supports the earlier findings by Frank et al. (1991), which claimed that post-merger returns were not significantly negative; and therefore their results are not necessarily specific to the time period of that study (1975-1984).

[10] For post-event analysis, cumulative average abnormal returns were found from months +4 to +39, and a test was conducted using a standard t-statistic with 35 degrees of fredom.

[11] In this paper six benchmarks are used (see Gregory, 1997) especially p. 978-980

CONCLUSION

The principal objective of this paper was to analyse the impact of mergers and acquisitions on shareholders returns. Using the U.K. data the paper assessed stock market response to the announcement of takeover bids for thirty randomly chosen successful bidders and establishes whether or not it is indicative of gains from mergers. Event study methodology was used to study the event (i.e., announcement of takeover) by focusing on the behaviour of the share returns in order to test whether their stochastic behaviour is affected by the disclosure of this firms-specific event. Using the market model the study finds that there are significant abnormal returns earned by shareholders of the target firms on the month the merger is announced. In contrast, the returns earned by stockholders of the bidding firms were found to be modest (see figures 1.1 (a) and (b)).

The study was extended for 36 months after the event. This post-event-performance study shows that the stockholders of the bidding companies earn negative abnormal returns. For our sample the cumulative abnormal returns was -10.99 percent. Although the observations of this study have been almost similar to those of other numerous researches, we note especially in previous section that this might be driven in our sample the cumulative abnormal returns was -10.99 percent. Although the observations of this study have been almost similar to those of other numerous researches, we note especially in previous section that this might be driven in part by choice of methodology or sample selection. However, we conclude in this study that for the period and the sample we have studied, *M* and *A* resulted in benefits to the acquired firms' shareholders. No loss was per se identified to accrue for the bidders during the event month. Nevertheless, for post-event-performance the study shows that bidding firms significantly suffer negative abnormal returns.

Appendix I: Average Abnormal Returns and Cumulative Abnormal Returns for Bidders and Targets

	Bidding Firms			Target Firms		
Month	*AAR*	*CAAR*	No of Firms	*AAR*	*CAAR*	No of Firms
-39	0.34	0.34	26	-2.14	-2.14	24
-38	-1.96	-1.62	26	0.96	-1.18	24
-37	0.62	-1.00	27	0.70	-0.48	26
-36	-2.27	-3.27	28	-0.79	-1.27	27
-35	-0.08	-3.35	29	-1.67	-2.93	27
-34	1.97	-1.39	29	-2.85	-5.78	29
-33	-1.14	-2.53	29	0.23	-5.56	29
-32	3.69	1.16	29	1.50	-4.06	29
-31	2.77	3.94	30	1.45	-2.61	29
-30	-0.99	2.94	30	1.80	-0.81	29
-29	-5.31	-2.37	30	-1.05	-1.86	29
-28	-1.34	-3.71	30	-4.83	-6.69	30
-27	3.89	0.18	30	-2.74	-9.43	30
-26	-0.06	0.12	30	-0.96	-10.39	30
-25	0.31	0.43	30	0.08	-10.31	30
-24	0.31	0.74	30	2.40	-7.91	30
-23	2.62	3.36	30	2.77	-5.14	30
-22	1.74	5.10	30	1.24	-3.91	30
-21	0.64	5.73	30	0.86	-3.04	30
-20	-4.14	1.60	30	-0.37	-3.42	30
-19	2.61	4.21	30	-0.93	-4.34	30
-18	1.00	5.21	30	1.28	-3.06	30
-17	-1.15	4.06	30	-0.85	-3.91	30
-16	0.50	4.56	30	-1.06	-4.97	30
-15	-0.19	4.37	30	1.04	-3.93	30
-14	1.42	5.79	30	-0.32	-4.24	30
-13	1.52	7.30	30	-0.53	-4.77	30
-12	2.04	9.35	30	-1.72	-6.50	30
-11	-0.20	9.14	30	-1.52	-8.01	30
-10	1.77	10.91	30	-1.85	-9.87	30
-9	1.98	12.90	30	5.07	-4.80	30
-8	-0.86	12.04	30	0.25	-4.55	30
-7	0.45	12.49	30	0.01	-4.54	30
-6	0.20	12.69	30	-0.28	-4.82	30
-5	0.30	12.99	30	1.72	-3.10	30
-4	4.70	17.69	30	1.14	-1.96	30

Appendix I: Continued...

	Bidding Firms			Target Firms		
Month	*AAR*	*CAAR*	No of Firms	*AAR*	*CAAR*	No of Firms
-3	1.78	19.47	30	2.47	0.50	30
-2	1.01	20.48	30	-0.59	-0.08	30
-1	1.67	22.15	30	4.21	4.13	30
0	2.33	24.48	30	15.21	19.33	30
+1	1.54	26.01	30	1.09	20.43	30
+2	1.52	27.54	30	0.97	21.39	30
+3	0.54	28.08	30	0.64	22.04	30
+4	1.40	29.48	30	0.51	22.54	30
+5	0.65	30.13	30	-0.24	22.30	30
+6	0.58	30.72	30	-0.42	21.88	30
+7	-1.67	29.04	30	-0.08	21.80	30
+8	-0.21	28.83	30	-0.01	21.79	30
+9	1.40	30.24	30	-0.12	21.67	30
+10	1.47	31.71	30	-0.33	21.34	30
+11	-3.70	28.01	30	-0.07	21.27	30
+12	-0.37	27.64	30	-0.30	20.97	30
+13	2.24	29.88	30	-0.15	20.81	30
+14	-3.03	26.85	30	-0.35	20.46	30
+15	-1.27	25.59	30	-0.04	20.42	30
+16	1.16	26.74	30	-0.23	20.19	30
+17	0.44	27.18	30	-0.21	19.99	30
+18	-1.64	25.54	30	-0.34	19.65	30
+19	-2.18	23.36	30	-0.76	18.89	30
+20	-2.26	21.10	30	-0.08	18.80	30
+21	1.37	22.48	30	-0.23	18.58	30
+22	2.95	25.43	30	-0.37	18.21	30
+23	-2.22	23.21	30	-0.25	17.96	30
+24	0.12	23.34	30	-0.69	17.27	30
+25	1.37	24.71	30	-0.34	16.93	30
+26	-0.02	24.70	30	-0.37	16.56	30
+27	-0.78	23.92	30	0.11	16.66	30
+28	2.31	26.23	30	-0.20	16.46	30
+29	3.27	29.50	30	-0.31	16.15	30
+30	1.20	30.69	30	0.14	16.29	30
+31	-0.26	30.43	30	-0.39	15.90	30
+32	-4.07	26.36	30	-0.23	15.67	30
+33	-0.37	26.00	30	-0.12	15.55	30
+34	-2.91	23.09	30	-0.27	15.28	30
+35	-3.88	19.21	30	-0.55	14.73	30
+36	0.32	19.53	30	-0.09	14.63	29
+37	-0.92	18.61	27	0.00	14.63	28
+38	-0.81	17.80	26	-0.39	14.24	26
+39	-0.72	17.08	26	-0.06	14.18	24

Source: Datstream Internationl, U.K.

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