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TAKEOVER ACTIVITY AND DIFFERENTIAL RETURNS TO SHAREHOLDERS OF BIDDING COMPANIES

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INQUIRY INTO CORPORATE TAKEOVERS IN THE UNITED KINGDOM

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The David Hume Institute has been commissioned by The Joseph Rowntree Memorial Trust to conduct an Inquiry into the issues raised by Corporate Takeovers in the U.K. This paper is the fifth of a series presenting the results of research undertaken in the course of the Inquiry, and also submissions of opinion received from individuals and organisations which are thought to be of wide general interest. The Institute hopes in this way to keep the public informed of work in progress. The Final Report will appear in the late Spring of 1991.

This submission is avowedly technical and employs mathematical and statistical techniques which may not be familiar to all readers. With the author's agreement, I have therefore provided a non-technical explanation of his results in the form of an abstract at the beginning of his paper.

The Institute has no collective views on any public policy question and is not committed to the views of any of its authors.

Alan Peacock
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ABSTRACT

Studies in the U.K. of the effect of the acquisition of companies on the benefits accruing to shareholders of bidding companies are an important complement to the present discussion on policy regarding takeovers. These indicate that whereas bidding companies may experience a positive increase in their wealth in the short run, analyses of a period of 24 months following takeover produces a different conclusion. Shareholders of bidding companies experience significant negative wealth changes.

Previous work by the author supports this conclusion. However, in seeking to explain this phenomenon, the author maintains that account must be taken of the wide variations in the returns obtained by individual bidding companies in the post-bid period. One might therefore hypothesise that these differences reflect differences in the extent to which managerial objectives override those of shareholders. 'Managerial theories of the firm have suggested that managers pursue corporate growth even when such a policy is detrimental to the interests of shareholders. Support for such theories could be found if shareholders of rapidly growing firms were to obtain inferior returns from acquisitions than their counterparts in less rapidly growing firms. Such theories would also hypothesise that, whereas shareholders can reduce risk by holding a well-diversified portfolio of securities, managers would seek to reduce risk to their employment and promotion prospects by a policy of diversification in acquisitions rather than by acquiring companies in related areas of activity. Support for this dimension of managerial behaviour could be found in related mergers achieving a higher level of post-acquisition performance than unrelated (diversified) mergers.

The testing of these hypotheses entails identification of suitable measure of the influences (explanatory variables) - such as company growth, company performance and degree of relatedness of the bid - on returns to bidders (dependent variable).

The results are presented in the usual manner associated with statistical method, using multi-regression analysis. The methods and results will be of considerable interest to specialists in such matters.

The conclusions of particular interest to the Inquiry are:

(i) There is a significant negative relationship between the growth of bidding firms and the returns obtained from acquired companies. This would offer support to the hypothesis that 'bad' acquisitions are indeed related to the pursuit of managerial objectives.

(ii)There is no evidence that the returns derived from acquisitions are a function of the degree of diversification through mergers.

The author adds a coda to his conclusions of some importance. He analysed the pattern of returns for two separate time periods - 1977-80 and 1981-86 - and found "a significant difference in the pattern of returns between the two sub-periods. The change in economic climate and regulatory framework appears to have led to an improvement in the efficiency of operations of the market for corporate control in the United Kingdom. There does also appear to be some as yet undetected relationship between the health of the economy and returns from acquisitions. Finally, the results obtained should provide a warning against reading too much into the findings of studies into security price behaviour using data extracted from relatively short time periods."

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1. INTRODUCTION

Recent studies of acquisition activity both for the UK and elsewhere have raised doubts about the realisation of benefits to shareholders of bidder companies. In a comprehensive study of UK mergers over the period 1955-1985, Franks and Harris (1989) report significant positive wealth changes over a period from four months prior to the bid announcement through to one month following the announcement month. However when the analysis was extended to include a period of 24 months following formal outcome, the shareholders of bidder companies experienced significant negative wealth changes. A similar pattern was observed in a study by Limmack (1989) of acquisitions over the period 1977-1986.

Various factors have been advanced for this phenomenon including the method of financing the acquisition, the performance record of the bidder company's management, and the relative size of bidder and target.

The aim of the current study is to investigate the factors which might determine the success or otherwise of the acquisition (as measured by the impact on the wealth of bidder company shareholders).

In the following section the theoretical framework of the study is presented. This is followed by a brief review of prior research findings. In the next section the data set and methodology are described, following which the results of the analysis are presented and discussed. The final section provides a summary of the conclusions and implications of the study.

2. THEORETICAL FRAMEWORK

Managerial theories of the firm suggest that a policy of corporate growth may be pursued even when such a policy is detrimental to the interests of shareholders. A growth-oriented corporate policy need not harm shareholders, particularly if such a policy ensures recruitment and retention of a superior

management team and workforce. However, growth is more likely to satisfy managerial rather than shareholder objectives (Mueller, 1969) and may be more rapidly achieved through external acquisition than by internal means. Support for managerial theories of the firm would therefore be available if the shareholders of rapidly growing firms obtained inferior returns from acquisitions than their counterparts in less rapidly growing firms. Consistent with this view, it may be hypothesised, therefore, that returns to the shareholders of acquiring firms would be inversely related to the historic rate of growth of the bidder company.

Within the managerial framework it could also be suggested that the pursuit of a diversified acquisition strategy is more relevant for the pursuit of managerial, rather than shareholder, objectives. Newbould (1970) suggested that managers undertake acquisitions to reduce the level of uncertainty in the business environment. Shareholders, on the other hand, can achieve their required level of risk reduction by holding a well-diversified portfolio of securities. From this, one would argue that managers might seek diversification without necessarily seeking extra returns. The benefits of such an acquisition would be to reduce unsystematic risk (which would not offer an expected return to shareholders in an efficient market). Managers undertaking acquisitions of companies in related areas would not expect to reduce unsystematic (i.e. diversifiable) risk to any great extent. They would, however, expect to earn greater profits from related acquisitions.

From the above it may be hypothesised that the post-acquisition performance of bidder firms would be influenced by the degree of relatedness of the acquisition.

The hypothesis would suggest that related mergers achieve a higher level of post-acquisition performance than unrelated mergers.

A number of early accounting-based studies of UK acquisition activity examined the relative profitability of various categories

of companies. In particular these studies tested whether acquiring firms were more, or less, profitable than non-acquiring firms. The implied theoretical argument behind such tests appears to be that, in an efficient market for capital allocations, only profitable firms will obtain the necessary support and funds for acquisitions. If firms with relatively poor profitability records undertake acquisitions then the costs of doing so, both in terms of the cost of financing the acquisition and the price to be paid, would be expected to reduce, if not eliminate, any potential benefits from acquisition. An opposing view, advanced by Morck et al (1990), interprets the hubris hypothesis proposed by Roll (1986) to suggest that 'the worst acquisitions are made by well-performing firms, since their managers are most likely to be infected by hubris', (P.33). This latter view would imply that the post-bid performance would depend on the pre-acquisition profitability record of the bidder company.

Extending the so-called hubris hypothesis, it might be surmised that there would be a relationship between the premium paid to the shareholders of the target company and post-acquisition bidder returns. If it were assumed that managers who may be infected by 'hubris' will pay excessive premiums for their acquisitions, the bid premium would be inversely related to the subsequent performance of the acquisition.

The number of acquisitions undertaken by the bidder during the ten-year period studied may perhaps be regarded as a further test of the competing theories of the firm, as only those firms with a successful acquisition record, i.e. those achieving increases in shareholder wealth, would be expected to repeat the experience.

Bidders continuing their acquisition when faced with resistance may be more prone to the vanity of 'hubris' and consequently overpay. If this hypothesis is correct then bidder returns would be expected to be lower in contested than in uncontested bids.

The final variable to be tested is that of relative size of bidder

and target (measured 6 months prior to the acquisition). This last variable does not fit easily into the above classification but has been cited by a number of authors as a contributory factor to post-acquisition performance. Kitching (1967, 1974) has suggested that post-merger performance is improved the larger the relative size of target to bidder. Others have suggested either the reverse (Kuehn, 1975, Kusewitt, 1985) or no relationship at all (Newbould, Strong and Wilson, 1976, Fowler and Schmidt, 1989).

3. PREVIOUS STUDIES

Recent studies of acquisition activity have identified a number of reasons as to why bidders may experience poor post-acquisition performance. For non-cash bids in the USA, Asquith, Brunner and Mullins (1986) identified the release of adverse information about the bidder, which was unrelated to the bid itself, as a contributing factor. Franks, Harris and Mayer (1989) identified the form of purchase consideration as a major factor both in the UK and the USA, with equity-financed acquisitions performing significantly worse post-merger than those financed by cash.

Research conducted by Morck, Shleifer and Vishny (1990) suggests that certain types of US bidder systematically overpay for their acquisitions. In particular those bidders with below-average performance records prior to the acquisition achieve significantly lower returns from bids than those with above-average performance records. The above authors also found that the acquisition of rapidly growing targets 'is extremely costly to the bidder' (Morck et al p.45) and that returns to bidders in unrelated acquisitions declined substantially between the 1970's and the 1980's.

In an analysis of potential strategic acquisition factors, Kusewitt (1985) identified a significant negative relationship between the size of the target relative to the bidder, and both accounting and security return performance over a period of one year subsequent to the acquisition. A similar negative relationship

was identified when the rate of acquisition (i.e. acquisitions per year) was used as the explanatory variable. The results obtained suggested that active acquirers suffer from some form of 'corporate indigestion' (Kusewitt, 1985, p.159). Further analysis suggested that related mergers and those acquisitions financed by equity (in contrast to the finding of Franks, Harris and Mayer 1989) produce superior returns to bidders. In an extension to the above analysis, Fowler and Schmidt (1989) found that the post-acquisition performance of bidder firms was positively related to the acquisition experience of the bidder, but unrelated to either the relative size of target and bidder or the degree of relatedness of the acquisition. Post-acquisition performance was also significantly lower for bidders in contested acquisitions.

The current study extends the above analysis by an examination of the factors influencing post-acquisition performance of UK bidders. In particular two related areas of attention will be considered: firstly, are bad acquisitions related to the pursuit of managerial objectives and secondly, do bidders with superior performance records achieve superior acquisition-related returns?

4. SAMPLE SET AND VARIABLES

Sample

The sample selected for analysis was drawn from the data set of all acquisitions involving UK companies over the period 1977-1986 (see Limmack, 1989, for further details). Additional data relating to those variables described below were obtained from Datastream and The Stock Exchange Year Book (various years).

The initial sample of 642 completed acquisition was reduced to 376 after elimination of all bids for which data on possible explanatory variables were unavailable. A further 13 acquisitions were also removed as these involved bidders who were subsequently targets within two years of the date of the bid.

Bidder Company Performance Measures

In order to identify those wealth changes which are bid-related it is necessary to control for general, or market-wide, movements in security prices. There are a number of possible control models available, some of which also adjust for the riskiness of individual securities. While it is generally preferable to select models such as the Market Model which control for the risk of individual securities, such models also suffer from a potential lack of accuracy in parameter estimation. The recent UK studies of merger activity (by Franks and Harris, 1989, and Limmack, 1989), both reported possible errors in estimation of market model parameters which would have produced a downward bias in post-acquisition returns to shareholders of bidder companies. In order to avoid potential bias the current study adopted the Index Model as the control model. The Index Model, while assuming that all securities are equally risky, requires no parameter estimation but assumes an alpha value of zero and a beta value of one for all securities, i.e.

$$\text{Loge}\ R_{j,t} = \text{Log}_e\ R_{m,t} + U_{j,t} \qquad (1)$$

where $R_{j,t}$ represents the return on security j in period t
$R_{m,t}$ represents the return on the market
and $U_{j,t}$ represents a residual error term.

In the absence of acquisition-related wealth effects the mean value of the residual error, or abnormal return, should be zero.

Abnormal returns were identified for each bidder company's shares over the period from the beginning of the bid month to 24 months following the month of announcement of the bid outcome.

Growth

Two measures of growth were adopted. The first involved the relative increase in Capital employed over the 5 years prior to the financial year in which the acquisition occurred:

$$\text{Log}_e\ (\text{Capital Employed}_{t-1}/\text{Capital Employed}_{t-5})$$

where t represents the financial year in which the acquisition occurred. Capital Employed is defined as Fixed Assets plus Current Assets, less Current Liabilities.

The second measure of growth is that of growth in Total Trading Income over the 5 years prior to acquisition:

$$\text{Log}_e\ (\text{Total Trading Income}_{t-1}/\text{Total Trading Income}_{t-5})$$

Total Trading Income includes sales, plus rental income, plus royalty income if any.

The growth variables were then standardised by reference to the median growth for the calendar year in which the bid was announced. Dummy variables were then included to represent growth faster or slower than the median value.

Relatedness

In order to identify the degree of relatedness of the bid, an examination was made of the areas of activity of both bidder and target in the year prior to acquisition. Each bid was then identified on a judgmental basis as either horizontal, vertical or conglomerate.

Profitability

Two variables were selected to measure profitability; firstly average ROCE over the 5 years prior to the acquisition, and secondly the increase in ROCE over the 5 years prior to the acquisition, as measured by

$$\text{Log}_e\ (\text{ROCE}_{t-1}/\text{ROCE}_{t-5})$$

ROCE is here defined as Pre-tax profit before interest divided by total capital employed, excluding intangibles, plus borrowings repayable within one year.

Each variable was also standardised by reference to the median profitability for the year in which the bid was announced. Dummy variables were then included to represent companies with higher/lower profitability than the relevant median value.

Target Shareholder Premium

The premium to shareholders of the target company was identified as the excess return over the period from three months prior to the month of announcement of the bid to the end of the month in which the outcome was identified. The above period was selected as previous studies of UK merger activity had identified significant positive abnormal returns to target companies three months prior to the formal bid announcement (Franks, Broyles and Hecht, 1977, and Limmack, 1989).

Other variables

The total number of acquisitions undertaken by each bidder over the ten years was identified as the measure of merger experience.

Resistance to a bid may arise either because of hostility to loss of independence at any price or because the price offered is felt to be too low. In either situation a wealth loss will be suffered if management of the bidder firm lose sight of the potential benefits and pay too high a premium for the target. Bid resistance has therefore been identified as any acquisition in which the bidder improved the initial terms of the bid.

The final variable, representing relative size, was measured by

$$\text{Log}_e\,(\text{MV of bidder equity}_{t-6}/\text{MV of target equity}_{t-6})$$

where t represents the month of formal announcement of the bid. A base date six months prior to the bid was selected to

avoid bias in either of the values through anticipation of the bid.

5. PRELIMINARY ANALYSIS

As a preliminary to testing the hypothesis outlined above, the returns data was examined for significant relationships with each of the following:

(a) date of the bid

(b) size of the bidder.

(a) Date of bid

The period under investigation was one of major change for the UK economy. Prior to 1979 the United Kingdom had been subject to a number of years of extremely high inflation. However 1979 saw the coming to power of a Conservative Government committed to the principles of a free market economy and reduction in the level of inflation. Subsequently there was a period of minor recession before the economy recovered, at least as reflected in the Stock Market Boom of the mid-1980's.

In order to test whether the change in economic environment was reflected in the returns surrounding acquisition activity the sample was divided into two sub-periods, with all subsequent results reported separately for those bids announced in the calendar years 1977-1980 and those announced in the calendar years 1981-1986.

Table 1

COMPARISON OF MEAN BIDDER RETURN BY TIME PERIOD

	1977-1980	**1981-1986**
Mean Bidder Return	-14.34%***	-0.97%
Standard error	(4.29)	(3.30)
Number of Observations	154	209

*F statistic for test of difference between means = 6.32***
****Denotes significant at 1% level.*
***Denotes significant at 5% level.*

As identified in Table 1 the mean returns for the first sub-period, 1977-1980, are significantly negative and also significantly lower than those for the second sub-period. Mean bidder returns for the period 1981-1986 were not, however, significantly different from zero. The pattern obtained is consistent with the results reported by Morck et al (1990) who identified an improvement in US bidder returns for the 1980's as against the 1970's, attributing this in part to the deregulatory aspects of the Reagan administration.

(b) Size of bidder

It is possible that acquisition-related returns to bidders may, in part, reflect a further manifestation of the so-called 'size anomaly'. As the mean bidder size increased over time (from £182 million in 1977-1980 to £404 million in 1981-1986), the use of absolute size as a possible explanatory variable would be likely to produce results similar to those reported in section 4(a) above. An alternative statistic was therefore identified representing the size[1] of each bidder relative to the median size of all bidders making acquisitions in that calendar year. Each bidder was then assigned a dummy variable depending

on whether that bidder was under or over the median size. Mean returns for under and over sized bidders for each sub-period were identified and tested for significant differences, with the results reported in Table 2.

Table 2

COMPARISON OF MEAN BIDDER RETURNS BY TIME PERIOD AND RELATIVE SIZE

	1977-1980	1981-1986	Overall
(a) Relatively large bidders			
Mean return	-7.07%	-4.48%	-5.48%
Standard error	(5.16)	(3.49)	(2.93)
Number of observations	67	103	170
(b) Relatively small bidders			
Mean return	-26.91%***	2.06	-9.12%**
Standard error	(7.52)	(5.58)	(4.61)
Number of observations	66	105	171
F-statistic	4.78**	0.98	0.45

****Denotes significant at 1% level*
***Denotes significant at 5% level*

As identified in Table 2, mean returns for relatively small bidders were significantly negative and lower than those for large bidders during the period 1977-1980. In the subsequent period the pattern was reversed with relatively small bidders achieving higher returns than relatively large bidders. The difference in returns between the two groups in the later period was not significant. The results indicate that bidder size is relatively unimportant as a determinant of acquisition-related returns.[2] The analysis which follows on individual variables will therefore be sub-divided by time period but not by size. Table 3 also describes the characteristics of bids in each sub-period.

Table 3

CHARACTERISTICS OF BIDDERS INCLUDED IN THE ANALYSIS

	1977-1980		**1981-1986**		**Statistic**
	Mean	**St. dev.**	**Mean**	**St. dev.**	
Growth in Capital Employed (%)	293.9	172.7	354.5	440.3	2.62
Growth in Total Trading Income (%)	317.8	242.9	354.7	547.9	0.61
Average ROCE (%)	20.2	7.5	17.3	8.2	11.71***
Increase in Return on Capital Employed (%)	115.2	118.5	173.4	781.6	0.84
Bidder Size (£m)	182.1	538.9	403.5	1024.6	5.27**
Target Size (£m)	18.2	30.1	80.2	203.2	7.60**
Target Premium (%)	52.8	52.0	44.1	35.8	2.35

****Denotes significant at 1% level.*

***Denotes significant at 5% level.*

6. ANALYSIS OF RESULTS

(a) By Time Period with individual variables

(i) Growth

As identified in Table 3 bidders in the period 1981-1986 achieved faster rates of growth than those in the period 1977-1980. The difference in mean growth rates was not, however, statistically significant. As an initial test of the relationship between bidder returns and growth, regressions were run of the former against the logarithmic transformation of each growth variable in turn, together with a dummy variable, T, representing bids undertaken in 1981-1986. The results of these regressions, reported below in equations 2 and 3, support the

hypothesis that returns to shareholders of bidding companies are inversely related to the historic rate of growth of the bidding company.

$$\text{Bidder Return} = \underset{(0.227)^{**}}{0.469} \; \underset{(0.040)^{***}}{-\,0.110} \; \text{Log}_e \text{ Growth in Cap. Emp.} \; \underset{(0.053)^{**}}{+\,0.128T} \qquad (2)$$

$$\text{Bidder Return} = \underset{(0.231)^{**}}{0.474} \; \underset{(0.040)^{***}}{-\,0.110} \; \text{Log}_e \text{ Growth in Tot. Tr. Income} \; \underset{(0.053)^{**}}{+\,0.115\,T} \qquad (3)$$

Figures in parenthesis represent standard errors.
****Indicates significant at 1% level*
***Indicates significant at 5% level*

Further support for the above hypothesis is provided by the results of tests into the difference between mean returns of bidders in relatively rapid and relatively slow growth companies, as shown in Table 4 . Table 4(a) identifies returns to bidders when growth in capital employed is used as the explanatory variable. In the first period, 1977-1980, there was no significant difference between the returns to rapid and slow growth companies. In the second period, however, bidders with records of relatively rapid growth obtained significantly lower returns than bidders with slower growth records. When growth in Total Trading Income was used as the explanatory variable, bidders with more rapid growth records obtained lower returns for their shareholders over the whole period. For the first period, however, the difference in mean returns was not statistically significant.

The above results support the hypothesis that those bidders who follow a policy of rapid growth do so at the expense of their shareholders. The results provide preliminary evidence to suggest that bad bids are made by management groups

pursuing their own objectives rather than those of their shareholders.

Table 4

COMPARISON OF MEAN BIDDER RETURNS BY TIME PERIOD AND RELATIVE GROWTH

(a) Growth in Capital Employed

	1977-1980	**1981-1986**	**Overall**
Bidders with Relatively fast growth			
Mean return	-14.35%**	-8.30%	-10.87%***
Standard error	(6.23)	(5.19)	(3.98)
Number of observations	78	105	183
Bidders with Relatively slow growth			
Mean return	-14.33%**	6.42%	-2.34%
Standard error	(5.92)	(4.12)	(3.46)
Number of observations	76	104	180
F-statistic	0.00	5.08**	2.61

(b) Growth in Total Trading Income

	1977-1980	**1981-1986**	**Overall**
Bidders with Relatively fast growth			
Mean return	-18.06%***	-10.33%*	-13.58%***
Standard error	(6.45)	(5.23)	(4.07)
Number of observations	77	106	183
Bidders with Relatively slow growth			
Mean return	-10.61%*	8.66%**	0.42%
Standard error	(5.66)	(3.77)	(3.31)
Number of observations	77	103	180
F-statistic	0.75	8.60***	7.11***

****Denotes significant at 1% level*

***Denotes significant at 5% level*

**Denotes significant at 10% level*

(ii) Relatedness

As described earlier, bids were categorised as either horizontal, vertical or conglomerate. Tests were then conducted of the difference between mean returns for each category with the results as reported in Table 5.

Table 5

COMPARISON OF MEAN BIDDER RETURNS BY TIME PERIOD AND BID TYPE

(a) Bid type

	1977-1980	**1981-1986**	**Overall**
(i) Horizontal			
Mean return	-9.19%	-2.68%	-5.48%
Standard error	(5.67)	(4.65)	(3.60)
Number of observations	73	97	170
(ii) Vertical			
Mean return	-18.67*	7.86%	-9.61%
Standard error	(10.51)	(17.06)	(9.14)
Number of observations	27	14	41
(iii) Conglomerate			
Mean return	-19.55%**	1.17%	-8.10%
Standard error	(8.94)	(4.74)	(4.86)
Number of observations	47	58	105
F-statistic	0.64	0.40	0.16

(b) Difference in Mean Returns: 1977-1980 versus 1981-1986

	F-statistic
Horizontal	0.80
Vertical	1.94
Conglomerate	4.65**

***Denotes significant at 5% level*
**Denotes significant at 10% level*

In the period 1977-1980, although horizontal bids achieved less negative returns than either of the other two sub-categories, the difference in mean returns was not significant. In the second sub-period all categories of bidders improved their performance, although bidders in horizontal acquisitions achieved lower returns than either of the other sub-categories. Again however the difference in mean returns was not significant. No significant relationship was therefore obtained between merger category, as identified here, and bidder returns. This result is insensitive both to inclusion of vertical acquisitions with either of the other sub-groups or exclusion of vertical acquisitions altogether. As Table 5(b) indicates, however, there was a significant improvement in the returns obtained through acquisitions by conglomerates from the first to the second sub-period. This finding is in contrast to that reported by Morck et al (1990), who found a deterioration in returns for unrelated acquisitions in the USA for the 1980's when compared to the returns obtained in bids undertaken in the 1970's.

It is possible that alternative measures of relatedness between bidder and target may provide a more sensitive factor in explaining acquisition-related returns to bidders. The results obtained here, however, suggest that there is no relationship between the degree of relatedness of the bid and returns to bidder company shareholders.

(iii) Profitability

In this section we test the hypothesis that management with relatively good records of profitability undertake 'better' acquisitions than their less successful counterparts. From the information supplied in Table 3 it may be observed that the average profitability record of bidders, as a group, had deteriorated from the first to the second period. However bidders in the period 1981-1986 had achieved a more rapid improvement in profitability than their counterparts in the earlier period. The initial results, reported in equations 4 and

5, assess the relationship between bidder returns and profitablity records (including a dummy variable, T, representing bids undertaken in 1981-1986). Further results, reported in Table 6, relate the profitability of each bidder to that of all other bidders in the same year, and categorise each bidder as more/less profitable than the median value.

Bidder Return	= 0.256	-0.136	Log_e Average ROCE	+0.122	T	(4)
	(0.189)	(0.063)**		(0.053)**		
Bidder Return	= -0.599	+0.098	Log_e change in profitability	+ 0.134	T	(5)
	(0.202)***	(0.042)**		(0.034)**		

Figures in parenthesis represent standard errors.
****Indicates significant at 1% level*
***Indicates significant at 5% level*

The results reported in equations 4 and 5 provide conflicting evidence. From equation 4 it appears that bidders with better profitability records achieve lower returns from acquisitions. The results of equation 5, however, suggest that bidders who have achieved a more rapid increase in profitability obtain better returns for their shareholders post acquisition.

The above results may reflect the difference in profitability of bidders in the two periods. In order to determine whether this interpretation is correct dummy variables were introduced to represent bidders with above average profitability. Initially bidders were categorised according to whether they had achieved a record of above or below average profitability (relative to other bidders in the same calendar year) over the four years prior to the bid. Tests were than conducted of the difference in mean returns between the two categories of bidders,for both sub-periods and for the full period. The results of this analysis are reported in Table 6(a).

Table 6

COMPARISON OF MEAN BIDDER RETURNS BY TIME PERIOD AND PROFITABILITY

(a) Based on Average ROCE

	1977-1980	**1981-1986**	**Overall**
Above Average Profitability			
Mean return	-9.68%	-5.68%	-7.37%
Standard error	(6.45)	(4.72)	(3.84)*
Number of observations	75	103	178
Below Average Profitability			
Mean return	-18.76%***	3.60%	-5.95%
Standard error	(5.68)	(4.59)	(3.66)
Number of observations	79	106	185
F-statistic	1.12	1.99	0.07

(b) Based on Increase in ROCE

	1977-1980	**1981-1986**	**Overall**
Above Average Increase			
Mean return	-14.55%**	3.80%	-4.12%
Standard error	(6.20)	(3.99)	(3.51)
Number of observations	77	104	181
Below Average Increase			
Mean return	-13.92%**	-5.70%	-9.25%**
Standard error	(6.13)	(5.35)	(3.97)
Number of observations	77	104	181
F-statistic	0.01	2.03	0.91

****Denotes significant at 1% level*

***Denotes significant at 5% level*

**Denotes significant at 10% level*

For the period 1977-1980, those bidders who had previously achieved a better profitability record obtained superior returns to their less profitable counterparts. In the second period,

however, the pattern was reversed, with those bidders having relatively weaker profitability records achieving better returns for their shareholders from acquisitions. The difference in mean returns between the two groups was not, however, statistically significant. Table 6(b) reports the results using increase in ROCE as the pre-bid measure of profitability. In the period 1977-1980 there is little difference in the results for the two categories of bidder. In the period 1981-1986, and in the overall period, bidders showing the greatest pre-bid improvement in profitability obtain slightly higher returns. Again, however, there was no significant difference between group means for any of the periods. The results of these tests therefore provide no evidence to support the hypothesis that bidders with superior (inferior) pre-bid performance records achieve superior (inferior) acquisition-related returns. Nor is there any evidence to support the hypothesis that management with superior profitability records are infected by hubris and subsequently undertake over-ambitious, i.e. poor, acquisitions.

(iv) Target Bid Premium

In order to test whether bad bids reflect overpayment for targets, regressions were run of bidder returns against target bid premium for both sub-periods and the overall period with the results reported in Table 7.

Table 7

(a) TARGET COMPANY BID PREMIUMS BY TIME PERIOD

	1977-1980	**1981-1986**	**Overall**
Bid premium	52.80%***	44.14%***	48.08***
Standard error	(4.94)	(3.11)	(2.82)
Number of observations	111	133	244
F-statistic			2.35

(b) RELATIONSHIP BETWEEN TARGET COMPANY BID PREMIUM AND RETURNS TO BIDDERS

Overall Period: 1977-1986

Bidder Returns to Month +24	= -0.171***	+0.209***Target Premium
	(0.043)	(0.066)

Sub-Period A: 1977-1980

Bidder Returns to Month +24	= -0.206***	+0.185**Target Premium
	(0.059)	(0.080)

Sub-Period B: 1981-1986

Bidder Returns to Month +24	= -0.161**	+0.280**Target Premium
	(0.064)	(0.113)

Figures in parentheses represent standard errors.
****Denotes significant at 1% level*
***Denotes significant at 5% level*

One surprising feature of the results is the positive relationship between bid premium and returns to bidders. The results indicate that the higher the price paid for the target, the more favourable the returns to the bidders. The result is consistent over all sub-periods.

There appears to be no simple explanation as to why this relationship has been found. The results do, however, provide

evidence which contradicts the hypothesis that losses to bidders in acquisitions arise through systematic overpayment for targets.

(v) Other Variables

Examination of the data set revealed a small number of relatively active acquirers. However the results of the analysis revealed no significant relationship between returns to bidders and level of merger activity, although there was a tendency for the more active acquirers to earn higher returns.

A significant difference in returns to bidders was observed when bids were categorised as either contested or uncontested, as reported in Table 8.

Table 8

MEAN RETURNS FOR BIDDERS ANALYSED BY TIME PERIOD FOR CONTESTED VERSUS UNCONTESTED BIDS

	1977-1980	**1981-1986**	**Overall**
Contested Bids			
Mean return	-17.20%***	-1.61%	-8.55%***
Standard error	(4.54)	(3.76)	(2.93)
Number of observations	137	171	308
Uncontested Bids			
Mean return	8.76	1.78%	3.98%
Standard error	(11.90)	(6.77)	(5.92)
Number of observations	17	37	54
F-statistic	3.67*	0.15	2.84*

****Denotes significant at 1% level*

**Denotes significant at 10% level*

Bidders in contested bids obtained significantly lower returns, both in the first sub-period and overall, than bidders in uncontested bids. A similar pattern was also reported by Franks and Harris (1989) and Bradley, Desai, and Kim (1988).

The results may be interpreted either as providing tentative support for Roll's hubris hypothesis, or the view expressed by Franks and Harris (1989) that 'revised bids may reflect potential competition acting as a discipline in the bidding market' (p.239).

Tests using the final variable, relative size of bidder and target, revealed no significant relationship with bidder returns.

(b) Using Multiple Regression Analysis

The above analysis suggests that a number of factors have an influence on the acquisition-related returns to bidders. Tables 9 and 10 present the results of multiple regressions of bidder returns on the previously identified possible explanatory variables. Regressions reported in Table 9 use the increase in bidder ROCE as the measure of profitability, while those in Table 10 use average ROCE. In each Table, columns 1 and 2 report the results of regressions run with the inclusion of the dummy variables for relative growth and profitability, while the regressions reported in columns 3 and 4 include actual growth and profitability measures. For consistency with the previous section the regressions incorporate a dummy variable to represent bidder size[3].

Table 9 reports a significantly negative relationship between bidder returns and growth in three out of four models. Although the evidence provided in Table 10 is less conclusive on this point, the results do support the earlier reported finding that firms with more rapid growth records obtain inferior returns from acquisitions.

The results reported in Tables 9 and 10 provide less consistent evidence on the relationship between bidder returns and pre-bid profitability.

Table 9

MULTIPLE REGRESSION OF BIDDER RETURNS ON BID CHARACTERISTICS

Profitability measured by increase in ROCE

	Dummy Variables		Absolute Values	
	Growth in Capital Employed	**Growth in Total Tr. Income**	**Growth in Capital Employed**	**Growth in Total Tr. Income**
	1	2	3	4
Intercept	-0.298***	-0.295***	-0.031	0.077
	(0.088)	(0.085)	(0.409)	(0.390)
Dummy =1, if bid was contested	0.062	0.065	0.066	0.074
	(0.082)	(0.082)	(0.082)	(0.081)
Dummy =1, if bid was in 1981-1986	0.108*	0.116*	0.096	0.077
	(0.061)	(0.061)	(0.060)	(0.061)
Dummy =1, if growth exceeds median value	-0.079	-0.101*	-	-
	(0.063)	(0.061)		
Dummy =1, if profitability increased faster than median value	0.014	0.027	-	-
	(0.061)	(0.060)		
Dummy =1 if size exceeds median value	-0.018	-0.021	-0.011	-0.027
	(0.066)	(0.065)	(0.064)	(0.064)
Bid premium	0.230***	0.224***	0.223***	0.221***
	(0.069)	(0.069)	(0.068)	(0.067)
Number of bids undertaken	0.027*	0.026*	0.028*	0.031**
	(0.015)	(0.015)	(0.015)	(0.015)
Log_e growth	-	-	-0.126**	-0.149***
			(0.053)	(0.052)

Table 9 continued

Log_e increase in profitability	-	-	0.086* (0.050)	0.092* (0.049)
Number of observations	222	222	222	222
Adjusted R^2	6.2%	6.7%	9.8%	10.9%

Figures in parentheses represent standard errors.
****Indicates Significant at 1% level*
***Indicates Significant at 5% level*
**Indicates Significant at 10% level*

Table 9 reports a positive relationship between bidder returns and profitability (significant in models 3 and 4), while the results in Table 10 suggest that there is no relationship between the two variables. Although the above analysis provides insufficient evidence to state conclusively that managers with proven records undertake more profitable acquisitions, there is also no evidence to support the version of the hubris hypothesis propounded by Morck et al (1990).

Although all models reported a negative coefficient for bidder size, in no cases were the magnitude of the coefficients significantly different from zero.

The results reported in Tables 9 and 10 confirm the significant positive relationship between the size of the bid premium and post-acquisition returns to bidders. One possible interpretation of this phenomenon is that it reflects situations where bidders pay extra for those targets which are most attractive. Under this interpretation the result may be considered to be consistent with the operation of a competitive acquisitions market. Further support for this interpretation may be found in the positive coefficient in all models for contested bids, i.e. contested bids may be expected to be made for those targets which are most attractive.

Table 10

MULTIPLE REGRESSION OF BIDDER RETURNS ON BID CHARACTERISTICS

Profitability measured by Average ROCE

	Dummy Variables		Absolute Values	
	Growth in Capital Employed	**Growth in Total Tr. Income**	**Growth in Capital Employed**	**Growth in Total Tr. Income**
	1	2	3	4
Intercept	-0.306*** (0.080)	-0.292*** (0.081)	0.372 (0.332)	0.278 (0.349)
Dummy =1, if bid was contested	0.083 (0.082)	0.082 (0.080)	0.081 (0.078)	0.079 (0.078)
Dummy =1, if bid was in 1981-1986	0.099* (0.060)	0.107* (0.060)	0.096 (0.060)	0.087 (0.060)
Dummy =1, if growth exceeds median value	-0.073 (0.061)	-0.098 (0.060)	-	-
Dummy =1, if profitability increased faster than median value	0.022 (0.060)	0.021 (0.059)	-	-
Dummy =1 if size exceeds median value	-0.008 (0.064)	-0.014 (0.064)	-0.019 (0.063)	-0.017 (0.064)
Bid premium	0.223*** (0.069)	0.217*** (0.069)	0.217*** (0.067)	0.221*** (0.067)
Number of bids undertaken	0.026 (0.015)	0.025* (0.015)	0.028* (0.014)	0.026* (0.015)
Log_e growth	-	-	-0.109** (0.051)	-0.082*** (0.052)

Table 10 continued

Log_e average in profitability	-	-	-0.032 (0.083)	-0.050 (0.083)
Number of observations	230	230	228	228
Adjusted R^2	5.8%	6.3%	7.5%	6.6%

Figures in parentheses represent t-statistics.
***Indicates Significant at 1% level
**Indicates Significant at 5% level
*Indicates Significant at 10% level

The results reported in Tables 9 and 10 also demonstrate that more active bidders earn higher returns, with a significantly positive coefficient for the variable 'number of bids undertaken' in seven out of eight regression models.

6. SUMMARY AND CONCLUSIONS

In the introduction to the study two main questions were asked, the first being whether bad acquisitions are related to the pursuit of management objectives. Comparison of the mean returns of relatively fast with relatively slow growth companies revealed that the former group achieved inferior returns to the latter group (see Table 4). Examination of the results in Tables 9 and 10 also identified a significantly negative relationship between bidder growth and subsequent acquisition-related returns. Although no evidence was found of a relationship between acquisition-related returns and the degree of relatedness of the bid, the above result suggests that bad acquisitions are indeed related to the pursuit of managerial objectives.

The second question posed was whether bidders with superior performance records achieve superior acquisition-related returns.

Both the results in Table 6(b) and those in Table 9 indicate that

bidders which have shown a greater improvement in profitability prior to the bid earn higher returns for their shareholders. No such relationship was found, though, when the average ROCE was included as possible explanatory variable, as reported in Tables 6(a) and 10. The results therefore do not provide unambiguous evidence that managements with superior track-records also achieve superior performance in acquisitions. They are however broadly in line with the results obtained for the United States by Morck (et al) despite the adoption of a longer period in the current study over which to measure acquisition-related returns.

The study also addressed a number of subsidiary issues including examination of the relationship between bid premium and acquisition-related returns. The results obtained were contrary to the predictions of the 'hubris' hypothesis in that a positive relationship was found between the two variables rather than the expected negative relationship. The results reported in Table 8 for bidders in contested bids, show significantly lower returns than for bidders in uncontested bids, and therefore provide tentative support for the hubris hypothesis. However when this variable is combined with others in the models reported in Tables 9 and 10, the coefficient identified is not significantly different from zero. There is therefore no support in these results for the hubris hypothesis.

No evidence was found of a significant relationship between relative size of bidder and target, or between actual bidder size, and acquisition-induced performance.

Finally, the results identified a significant difference in the pattern of returns between the two sub-periods. The change in economic climate and regulatory framework appears to have led to an improvement in the efficiency of operations of the market for corporate control in the United Kingdom. There does also appear to be some as yet undetected relationship between the health of the economy and returns from acquisitions. Finally the results obtained provide a warning against reading too much into the findings of studies into

security price behaviour using data extracted from relatively short time periods.

FOOTNOTES

1. Size of bidder is represented by the market value of the total equity of the bidder six months prior to the bid announcement.

2. This conclusion was unaffected by the use of size itself as a possible explanatory variable in regressions with bidder returns.

3. Repeating the analysis with Log_e bidder size revealed no significant difference in the results.

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