Takeovers, Shareholder Returns, and the Theory of the Firm

Michael Firth


Stable URL:
http://links.jstor.org/sici?sici=0033-5533%28198003%2994%3A2%3C235%3ATSRATT%3E2.0.CO%3B2-C

*The Quarterly Journal of Economics* is currently published by The MIT Press.
TAKEOVERS, SHAREHOLDER RETURNS, AND THE THEORY OF THE FIRM

MICHAEL FIRTH

The paper examines recent merger and takeover activity in the United Kingdom. Specifically, the impact of takeovers on shareholder returns and management benefits is analyzed, and some implications for the theory of the firm are drawn from the results. The research showed that mergers and takeovers resulted in benefits to the acquired firms' shareholders and to the acquiring companies' managers, but that losses were suffered by the acquiring companies' shareholders. The results are consistent with takeovers being motivated more by maximization of management utility reasons, than by the maximization of shareholder wealth.

Takeovers are a major activity within the business scene in the United Kingdom, and many millions of pounds are spent each year in acquiring control of companies. Studies have shown that takeovers provide the major component of growth for a great many firms in Britain [Meeks, 1977; and Singh, 1971]. The purpose of this paper is to report the results of a study into recent takeover activity in the United Kingdom: specifically, the research measured shareholder returns on securities that were involved in takeover situations, and some implications for the theory of the firm are drawn from the results.

The paper proceeds by examining the two major economic and behavioral motives for making takeovers and by briefly reviewing the empirical evidence to date in Britain and the United States. The shareholder return research design is described in Section II, and the results are presented in Sections III and IV. Section V presents some evidence on the returns to management from takeover activity. Finally, Section VI summarizes the impact of the research findings for the theory of the firm.

I. MOTIVES FOR, AND OUTCOMES OF, TAKEOVERS

Two major competing theories of the firm have evolved in the academic literature, and empirical evidence in support of both has been forthcoming. These two theories of the firm can be used to explain why companies engage in takeovers, and they can be used to predict the outcome of post-merger performance. These two theories are the following:

a. The neoclassical profit maximization theory of the firm which holds that competitive market forces motivate firms to maximize
shareholder wealth. The theory says that firms will engage in making takeovers if it results in increased shareholder wealth for the acquiring company [Manne, 1965]. Increased shareholder wealth is likely to result if the acquiring firm's profitability increases following the takeover. Profitability can increase through the creation of monopoly power, through synergy, or through injecting superior management into the acquired firm. A constraint on this motive for making takeovers occurs when there are a lot of firms competing with each other to take over target companies as they will tend to bid against each other until all the profit potential available from monopoly power, synergy, restructuring, etc. is driven away; Mandelker [1974] termed this the perfectly competitive acquisitions market.

b. Maximizing management utility [Baumol, 1959; Marris, 1964; Mueller, 1969; Penrose, 1959; and Williamson, 1964]. This theory holds that beyond achieving a certain "satisfactory" level of profits, managers will attempt to maximize their own self-interests, and these do not necessarily correspond to maximizing shareholder wealth. Management self-interests are likely to include such factors as reducing the risk of losing their jobs, increasing their salary levels, and increasing their power and job satisfaction. These self-interests can be aided by growth in size (see Section V for a brief resume of the empirical evidence), and takeovers are, in practice, the quickest way of growing.

The shareholder wealth maximization theory requires that a takeover lead to increased profitability for the acquiring firm in order for the takeover to be justified. In contrast, the maximization of management utility theory does not necessarily require increased profitability; an increase in size and an increase in managers' benefits are the more likely criteria. We can therefore examine takeovers for their impact on profitability, size, and management benefits, and this will give some indication as to which motive for making takeovers is the more relevant. The profitability of takeovers has been examined in two main ways. These are (a) examining financial data based on the accounting numbers of the acquiring and acquired firms prior to, and subsequent to, the takeover (in general, increases in profitability will be reflected in stock market ratings); and (b) examining the returns to shareholders of firms engaged in takeovers.

Research based on accounting data has shown that, in general, acquired firms had poor profitability and poor stock market ratings prior to the takeover [Buckley, 1972; Firth, 1976; Kuehn, 1975; Newbould, 1970; Singh, 1971; and Tzoannos and Samuels, 1972, in the United Kingdom; and Monroe and Simkowitz, 1971; and Stevens,
1973, in the United States]. This finding is consistent with acquiring companies being attracted to poorly run firms with the aim of re-structuring them so as to increase profits and hence increasing shareholder wealth. However, the takeover premiums paid for the acquired firms are usually very large and the profit potential of the takeover may be completely discounted away [Firth, 1976; and Newbould, 1970]. Acquiring firms, on the other hand, have tended to have average or above average profitability prior to the takeover [Kuehn, 1975; and Newbould, 1970]. Subsequent to the bid, however, acquiring firms in the United Kingdom tended to suffer reductions in profitability [Firth, 1976; Meeks, 1977; and Utton, 1974]; the evidence in the United States is much less clear, with some studies revealing reductions in profitability [Kelly, 1967; and Reid, 1968], while others have indicated no change [Hogarty, 1970; and Lev and Mandelker, 1972]. Thus, the evidence, in the United Kingdom at least, suggests that, on average, takeovers do not lead to monopoly power, synergy, or the improvement of the acquired firm's management. This may reflect such factors as the large premiums paid for acquiring control and the difficulties in integrating and injecting new management into the acquired firm [Penrose, 1959].

The second major method of examining the profitability of takeovers has been to use an efficient markets framework where shareholder returns are measured. An efficient market is defined as one where a share price fully incorporates all available information on that security and that share prices provide accurate signals for resource allocation [Fama, 1970]. Assuming an efficient market,1 we can measure the movement of share prices around the time of a specific event, such as a takeover, and this gives us the "economic impact" of that event. It also, of course, gives a direct measure of the increase-decrease in shareholder wealth. Research studies, using this approach, have thrown up conflicting findings between Britain and the United States. The contrasting findings relate to the shareholder returns to the acquiring firm, and to the overall gain-loss position. Studies in the United Kingdom have found that on average acquiring firms suffered falls in their share prices on the announcement of the takeover [Firth, 1976, 1979] and that these losses were being sustained several years later.2 These results are consistent with the accounting-data-based research of Meeks [1977] and Utton [1974]; i.e., the stock market perceives takeovers as reducing the profitability of the

1. Studies on the British and American stock markets have shown them to be efficient. See Firth [1977] for a description of these studies.
2. Dodd [1976] found similar results for acquiring firms in Australia.
acquiring firm and hence the share price falls. The evidence from the British studies is consistent with takeovers being made for reasons other than shareholder wealth maximization. In contrast, the American studies have found either smallish gains or zero gains for the shareholders of acquiring companies [Dodd and Ruback, 1977; Halpern, 1973; Kummer and Hoffmeister, 1978; Langetieg, 1978; Mandelker, 1974; and Shick and Jen, 1974]. Thus, in the United States, takeovers have, at worst, a neutral impact for the acquiring firms’ stockholders. The American evidence is therefore somewhat indecisive in providing evidence that is consistent with, or inconsistent with, takeovers being made for shareholder wealth maximization reasons.

All research studies have shown that acquired companies’ shareholders gain from takeovers (see Firth [1976]; Franks, Broyles, and Hecht [1977]; Dodd [1976]; Dodd and Ruback [1977]; and Haugen and Udell [1972], for example), although there have been differences regarding the magnitudes of the gains, and differences regarding the extent to which the takeover news was anticipated prior to the bid announcement.

Analyses have also been made of the overall gains-losses from takeovers, since this gives us one indication of the impact of takeovers on the economy as a whole. Again the results have differed between the United Kingdom and the United States. The results of Firth’s study [1979] indicated that there was a zero overall gain for takeovers in the United Kingdom (i.e., the absolute gains to the acquired companies’ shareholders exactly offset the losses to the acquiring firms’ shareholders), and thus the stock market perceived there to be no overall improvement in profitability for the merged firms. The American results, however, have shown that takeovers do lead to overall stock market gains [Halpern, 1973]. Thus, the American stock market does perceive there to be some benefits from takeovers for the corporate profitability of the merged firms. Dodd and Ruback [1977] have suggested that this overall gain is the result of improving the profitability performance of the acquired firm, and not the result of expected monopoly benefits or synergistic benefits.

In summary, past British evidence shows that takeovers result in losses to the acquiring firms’ shareholders, and that there is a no-gain–no-loss position for the merged firm. However, researchers have suggested that the acquiring firm’s management benefits from takeovers, and Section V reviews the arguments and presents some empirical evidence on this aspect. The evidence to date is therefore consistent with takeovers being made so as to maximize management
utility. In contrast, the American research has shown that takeovers result in either small gains or zero gains to the acquiring companies' shareholders, and that there is an overall gain for the merged firm (thus suggesting a benefit for the economy as a whole).

II. RESEARCH DESIGN

A. Data

The data used in the study consisted of takeover bids for stock exchange listed firms (the offeree) made by stock exchange listed firms (the offeror) in the period 1969 to 1975. Takeover bids where the offeror already held a 30 percent stake, or more, in the offeree six months prior to the bid announcement were omitted from the sample. This procedure was adopted because the full takeover process is restricted when the offeror has a large pre-acquisition share stake.

A total of 486 offerees were identified in the period, and a total of 563 offerors were involved in making the bids (this includes all the offerors involved in contested bids). Three hundred and fifty-five bids were successful, based on the original offer; 79 bids were successful after a revised bid or a counterbid had been received; and 52 bids were unsuccessful. A total of 434 offerors were successful, and 129 were unsuccessful. Revised bids and counterbids generally occur within one month after the original bid announcement, and their impact is shown in the residuals analyses.

B. Methodology

The measurement of shareholder returns consequent to a takeover consists of comparing the actual returns on a security against those expected if there had been no bid. The differences are known as residuals; thus,

\[ U_{jt} = AR_{jt} - ER_{jt}, \]

where

\begin{align*}
U_{jt} & = \text{the residual for security } j \text{ in time period } t. U_{jt} \text{ is expected to have a mean value of zero, except when new, firm-specific, information becomes available to the stock market, i.e., takeover situations;} \\
AR_{jt} & = \text{the actual return on security } j \text{ in time period } t; \text{ and} \\
ER_{jt} & = \text{the expected return on security } j \text{ in time period } t.
\end{align*}

The expected return \( ER_{jt} \) is derived from the following market model relationship, suggested by Sharpe [1963]:

\[ R_{jt} = \alpha_j + \beta_j R_{Mt} + \bar{e}_{jt}, \]
where
\[ \tilde{R}_{jt} = \text{rate of return of security } j \text{ in time period } t; \]
\[ \alpha_j, \beta_j = \text{parameters that vary from one security to another; } \beta_j, \text{ known as systematic risk, expresses the covariance between the returns on security } j \text{ and the returns on the market index, i.e., } \text{cov}(\tilde{R}_{jt}, \tilde{R}_{Mt})/\sigma^2(\tilde{R}_{Mt}); \]
\[ \tilde{R}_{Mt} = \text{rate of return on a value-weighted market portfolio in time period } t; \]
\[ \tilde{e}_{jt} = \text{random disturbance term of security } j \text{ in time period } t. \tilde{e}_{jt} \text{ is assumed to be independently normally distributed and to satisfy the normal assumptions of a linear regression model.} \]

The expected return for period \( t \) is calculated thus
\[ ER_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{Mt}. \]

The parameters of the market model relationship were estimated using the last forty-eight months of data up to month \( t \) (i.e., \( t - 48 \) to \( t - 1 \)), but excluding the period twelve months prior to, and twelve months subsequent to, the takeover bid month. This moving average method of estimating \( \beta \) was adopted so as to account for possible shifts in the risk parameters over time [Mandelker, 1974]. The twenty-five months of data surrounding the bid announcement were omitted so as to exclude the presence of nonrandom price behavior associated with takeover bids; prior research in the United Kingdom has shown that any nonrandom price behavior took place within twelve months on either side of the bid announcement [Firth, 1976, 1979].

The announcement of a takeover bid itself may result in the risk parameters of offeror firms and unsuccessful offeree firms being shifted. For example, the acquisition of a firm in a different industry to that of the acquiring company may result in the acquiring firm’s systematic risk \( \beta_j \) changing by a significant amount. In order to examine for significant shifts in the risk parameters, pre and post the bid announcement, the following dummy variable regression is run:
\[ R_{jt} = a_j + a'D_t + b_j R_{Mt} + b'D_t R_{Mt} + e_{jt}. \]

The above regression equation, run for each offeror firm, and for each unsuccessful offeree, uses a total of sixty months of data; this being from month \(-48\) to month \(-13\) and from month \(+13\) to month \(+36\) (these months being relative to the announcement of the bid. The bid announcement month is month 0). Again, twenty-five months of data surrounding the bid announcement were omitted so as to exclude...
the presence of nonrandom price behavior associated with takeover bids. The dummy variable $D_t$ is set equal to zero for the period month $-48$ to month $-13$ and set equal to one for the period month $+13$ to month $+36$. The significance of the $t$-statistic on coefficient $b_j$ is then used to measure for significant shifts in the risk parameters [Johnston, 1972].

If the $t$-statistics are not significant (at the 0.05 level of significance), then this implies that there are no differences in $\beta_j$ pre and post the bid announcement. A significant positive $t$ statistic implies an increase in $\beta_j$ post the takeover announcement and a significant negative $t$ statistic indicates a decrease in $\beta_j$. A total of thirty-nine significant changes in $\beta_j$ over the 563 offeror firms was found (twenty-two increases, seventeen decreases) and a total of five significant changes over the fifty-two unsuccessful offeree firms (three increases, two decreases). The number of significant changes was not greater than expected, and this is consistent with prior studies that have examined changes in $\beta_j$ [Firth, 1978; and Haugen and Langetieg, 1975].

Average residuals and cumulative average residuals were calculated for four groups. These were the following:

1. successful bids for offerees,
2. unsuccessful bids for offerees,
3. successful offerors,
4. unsuccessful offerors.

The average residual ($AR_m$) for each month $m$, relative to the takeover announcement month is calculated thus:

$$ AR_m = \frac{1}{N} \sum_{j=1}^{N} U_{jm}, $$

where $j = 1, \ldots, N$ is the number of securities in the sample group.

The cumulative impact of the residuals over time is calculated as

$$ CAR_{x,y} = \sum_{m=x}^{y} AR_m, $$

3. Dodd and Ruback [1977], using a similar technique, found a proportionately greater number of significant changes in $\beta_j$.

Replications were made of the tests in the months subsequent to the bid announcement, using $\beta_j$’s calculated on data from month $+13$ to month $+36$. The results produced identical conclusions to those reported here. The use of pre-announcement $\beta_j$’s and post-announcement $\beta_j$’s was adopted by Dodd and Ruback [1977] and Langetieg [1978] in their studies on U. S. takeovers.
where $CAR_{x,y} =$ cumulative average residual calculated over the period, month $X$ to month $Y$.

The average residuals and cumulative average residuals are used to examine the impact of takeovers on security returns. In order to see whether the CARs are significantly different from zero, probability tests using the $t$-statistic were run. The methodology is briefly discussed below.

The procedure used to test for the statistical significance of the average monthly residuals is similar to the methodology used by Mandelker [1974], Ellert [1976], Dodd and Ruback [1977], and Kummer and Hoffmeister [1978] in their studies of takeovers and stockholder returns in the United States. Since certain items, such as common industry factors, cause residuals to be correlated across securities in a given month, we cannot assume that the residuals of securities are cross-sectionally independent when deriving a test statistic because of possible overstatement of the $t$ values. This problem can be avoided by constructing portfolios of securities and calculating standardized portfolio residuals.

The portfolios are formed as follows. Define $M_j$ as the calendar month of the offer for security $j$. The firm is included in the portfolio formed at month $T$ if

$$M_j + L \leq T \leq M_j + K,$$

where $L$ and $K$ are months dated relative to the calendar month. As an example, let $L = -12$, $K = +1$, and $M_j = 103$ (i.e., the takeover announcement occurs in calendar month 103). Firm $j$ will be included in the portfolio for calendar months 91 to 104.

The average portfolio residual at month $T$ across securities is calculated thus:

$$e_T = \frac{1}{N_T} \sum_{j=1}^{N_T} e_{jT},$$

where $N_T$ is the number of securities in the portfolio at $T$ ($N_T$ is generally different for different calendar months).

The next stage of the process is to standardize each portfolio residual $e_T$ by a measure of the portfolio variability. This measure is given by the estimated standard deviation of the residuals of portfolio $e_T$ for each of the last 48 months before $T$ (i.e., $T - 48$ to $T - 1$):

$$SD_T = \left[ \frac{1}{47} \sum_{m=1}^{48} \left( e_{T,m} - \frac{1}{48} \sum_{m=1}^{48} e_{T,m} \right)^2 \right]^{1/2}$$
By dividing $e_T$ by $SD_T$, we arrive at the standardized portfolio residual term ($SPR$) in month $T$:

$$SPR_T = e_T / SD_T.$$  

This is a $t$-statistic with 47 degrees of freedom. Using this procedure we obtain one $SPR$ for each calendar month $T$. The standard $t$-test can be employed to examine whether the standardized portfolio residuals are statistically different from zero. To calculate a portfolio test statistic, a weighted average standardized portfolio residual is formed:

$$WASPR = \sum_{T=\min}^{\max} SPR_T \times W_T,$$

where min and max are the first and last calendar months, respectively, in which portfolios are formed and the weights are given by

$$W_T = N_T / \sum_{t=\min}^{\max} N_t.$$  

Thus, more weight is given to calendar months in which there are more firms in the portfolio.

The portfolio test statistic is the ratio of the weighted average standardized portfolio residual to the standard error of the $WASPR$. As each portfolio residual is already standardized, the variance of the standardized portfolio residuals $\sigma^2(SPRT)$ is equal to one, and hence the variance of the weighted average standardized portfolio residual is

$$\sigma^2(WASPR) = \sum_{T=\min}^{\max} W_T \sigma^2(SPRT)$$

$$= \sum_{T=\min}^{\max} W_T.$$  

The portfolio $t$-statistic ($PTSTAT$) is therefore given as

$$PTSTAT = WASPR / \sigma(WASPR).$$  

This is a $t$-statistic for a portfolio constructed for a specific choice of $L$ and $K$. Each pair of $L$ and $K$ will form a different standardized residual term, and the $PTSTAT$ will tell us whether these are significantly different from zero.

**III. RESULTS**

The results for the residuals analysis are shown in Tables I, II, III, and IV. Specifically Table I relates to the sample of offerees who
TABLE I
RESIDUALS ANALYSIS: OFFEREES TAKEN OVER

<table>
<thead>
<tr>
<th>Month</th>
<th>Average residual ($AR_m$)</th>
<th>Percentage of securities with positive residuals</th>
<th>Cumulative average residual (CAR)</th>
<th>Percentage of securities with positive CAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>-48</td>
<td>-0.007</td>
<td>48</td>
<td>-0.007</td>
<td>48</td>
</tr>
<tr>
<td>-36</td>
<td>-0.007</td>
<td>47</td>
<td>-0.011</td>
<td>46</td>
</tr>
<tr>
<td>-24</td>
<td>0.003</td>
<td>51</td>
<td>-0.010</td>
<td>46</td>
</tr>
<tr>
<td>-12</td>
<td>-0.002</td>
<td>49</td>
<td>-0.016</td>
<td>43</td>
</tr>
<tr>
<td>-11</td>
<td>-0.004</td>
<td>49</td>
<td>-0.020</td>
<td>42</td>
</tr>
<tr>
<td>-10</td>
<td>0.002</td>
<td>50</td>
<td>-0.018</td>
<td>43</td>
</tr>
<tr>
<td>-9</td>
<td>-0.003</td>
<td>48</td>
<td>-0.021</td>
<td>43</td>
</tr>
<tr>
<td>-8</td>
<td>0.009</td>
<td>53</td>
<td>-0.012</td>
<td>45</td>
</tr>
<tr>
<td>-7</td>
<td>-0.006</td>
<td>47</td>
<td>-0.018</td>
<td>43</td>
</tr>
<tr>
<td>-6</td>
<td>-0.001</td>
<td>48</td>
<td>-0.019</td>
<td>43</td>
</tr>
<tr>
<td>-5</td>
<td>-0.003</td>
<td>48</td>
<td>-0.022</td>
<td>42</td>
</tr>
<tr>
<td>-4</td>
<td>0.007</td>
<td>52</td>
<td>-0.015</td>
<td>44</td>
</tr>
<tr>
<td>-3</td>
<td>0.009</td>
<td>55</td>
<td>-0.006</td>
<td>46</td>
</tr>
<tr>
<td>-2</td>
<td>0.013</td>
<td>60</td>
<td>0.007</td>
<td>50</td>
</tr>
<tr>
<td>-1</td>
<td>0.065</td>
<td>81</td>
<td>0.072</td>
<td>71</td>
</tr>
<tr>
<td>0</td>
<td>0.281</td>
<td>99</td>
<td>0.353</td>
<td>98</td>
</tr>
<tr>
<td>+1</td>
<td>-0.002</td>
<td>50</td>
<td>0.351</td>
<td>98</td>
</tr>
<tr>
<td>+2</td>
<td>0.009</td>
<td>55</td>
<td>0.360</td>
<td>98</td>
</tr>
<tr>
<td>+3</td>
<td>0.003</td>
<td>52</td>
<td>0.363</td>
<td>98</td>
</tr>
</tbody>
</table>

were taken over; Table II to offerees who were not taken over; Table III to successful offerors; and Table IV to unsuccessful offerors. Each table shows the average monthly residual, the percentage of securities with positive monthly residuals, the cumulative average residual from 48 months prior to the bid announcement, and the percentage of securities with positive CARs, for each month relative to the bid announcement (month 0 is the month of the bid announcement and its residual reflects the response of the stock market to the official release of the takeover news).

In measuring the returns to shareholders from takeovers, and in examining for aspects of market efficiency, we are particularly interested in the significance of the residuals performance in specific periods. The significance of the residuals in the various periods is measured by the portfolio t-statistic (PTSTAT) described in Section IIB. The periods in which we are interested are listed below.

1. Month -48 to month -13. American research has suggested that offeree firms may suffer poor share price performance in this period, reflecting poorer than expected profitability [Kummer and Hoffmeister, 1978; and Langetieg, 1978]. Conversely, American offeror
TABLE II
RESIDUALS ANALYSIS: OFFEREES NOT TAKEN OVER

<table>
<thead>
<tr>
<th>Month</th>
<th>Average residual ((AR_m))</th>
<th>Percentage of securities with positive residuals</th>
<th>Cumulative average residual ((CAR))</th>
<th>Percentage of securities with positive (CAR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-48</td>
<td>0.006</td>
<td>52</td>
<td>0.006</td>
<td>52</td>
</tr>
<tr>
<td>-36</td>
<td>-0.003</td>
<td>49</td>
<td>0.004</td>
<td>47</td>
</tr>
<tr>
<td>-24</td>
<td>-0.008</td>
<td>46</td>
<td>0.011</td>
<td>46</td>
</tr>
<tr>
<td>-12</td>
<td>0.002</td>
<td>51</td>
<td>0.016</td>
<td>42</td>
</tr>
<tr>
<td>-11</td>
<td>-0.002</td>
<td>48</td>
<td>0.018</td>
<td>42</td>
</tr>
<tr>
<td>-10</td>
<td>-0.006</td>
<td>45</td>
<td>0.024</td>
<td>40</td>
</tr>
<tr>
<td>-9</td>
<td>0.001</td>
<td>50</td>
<td>0.023</td>
<td>41</td>
</tr>
<tr>
<td>-8</td>
<td>-0.004</td>
<td>48</td>
<td>0.027</td>
<td>40</td>
</tr>
<tr>
<td>-7</td>
<td>0.006</td>
<td>53</td>
<td>0.021</td>
<td>43</td>
</tr>
<tr>
<td>-6</td>
<td>0.009</td>
<td>55</td>
<td>0.012</td>
<td>45</td>
</tr>
<tr>
<td>-5</td>
<td>-0.003</td>
<td>48</td>
<td>0.015</td>
<td>45</td>
</tr>
<tr>
<td>-4</td>
<td>0.009</td>
<td>55</td>
<td>0.006</td>
<td>47</td>
</tr>
<tr>
<td>-3</td>
<td>0.009</td>
<td>56</td>
<td>0.003</td>
<td>50</td>
</tr>
<tr>
<td>-2</td>
<td>0.008</td>
<td>55</td>
<td>0.011</td>
<td>52</td>
</tr>
<tr>
<td>-1</td>
<td>0.084</td>
<td>83</td>
<td>0.095</td>
<td>74</td>
</tr>
<tr>
<td>0</td>
<td>0.312</td>
<td>99</td>
<td>0.407</td>
<td>99</td>
</tr>
<tr>
<td>1</td>
<td>0.024</td>
<td>63</td>
<td>0.431</td>
<td>99</td>
</tr>
<tr>
<td>2</td>
<td>0.010</td>
<td>57</td>
<td>0.441</td>
<td>99</td>
</tr>
<tr>
<td>3</td>
<td>0.009</td>
<td>55</td>
<td>0.450</td>
<td>99</td>
</tr>
<tr>
<td>4</td>
<td>-0.006</td>
<td>46</td>
<td>0.444</td>
<td>99</td>
</tr>
<tr>
<td>5</td>
<td>0.004</td>
<td>52</td>
<td>0.448</td>
<td>99</td>
</tr>
<tr>
<td>6</td>
<td>-0.001</td>
<td>49</td>
<td>0.447</td>
<td>99</td>
</tr>
<tr>
<td>7</td>
<td>-0.008</td>
<td>46</td>
<td>0.439</td>
<td>99</td>
</tr>
<tr>
<td>8</td>
<td>-0.001</td>
<td>50</td>
<td>0.438</td>
<td>99</td>
</tr>
<tr>
<td>9</td>
<td>0.006</td>
<td>52</td>
<td>0.444</td>
<td>99</td>
</tr>
<tr>
<td>10</td>
<td>0.007</td>
<td>54</td>
<td>0.451</td>
<td>99</td>
</tr>
<tr>
<td>11</td>
<td>-0.006</td>
<td>47</td>
<td>0.445</td>
<td>99</td>
</tr>
<tr>
<td>12</td>
<td>0.002</td>
<td>51</td>
<td>0.447</td>
<td>99</td>
</tr>
<tr>
<td>24</td>
<td>0.001</td>
<td>51</td>
<td>0.451</td>
<td>99</td>
</tr>
<tr>
<td>36</td>
<td>-0.004</td>
<td>48</td>
<td>0.432</td>
<td>99</td>
</tr>
</tbody>
</table>

Firms have been found to have positive residuals in this period, possibly reflecting better than expected profitability [Halpern, 1973; Kummer and Hoffmeister, 1978; Langetieg, 1978; Mandelker, 1974; and Shick and Jen, 1974].

2. Month -12 to month -2. This period was examined to see if there was any anticipating of the bid in the months before the bid announcement. Some American researchers have concluded that takeovers are anticipated to a certain extent. As with period 1, studies in the United States have shown that offerors have received positive residuals in the months prior to the bid.
TABLE III
RESIDUALS ANALYSIS: SUCCESSFUL OFFERORS

<table>
<thead>
<tr>
<th>Month</th>
<th>Average residual ($AR_m$)</th>
<th>Percentage of securities with positive residuals</th>
<th>Cumulative average residual ($CAR$)</th>
<th>Percentage of securities with positive $CAR$</th>
</tr>
</thead>
<tbody>
<tr>
<td>-48</td>
<td>0.001</td>
<td>50</td>
<td>0.001</td>
<td>50</td>
</tr>
<tr>
<td>-36</td>
<td>0.006</td>
<td>52</td>
<td>0.014</td>
<td>56</td>
</tr>
<tr>
<td>-24</td>
<td>-0.005</td>
<td>48</td>
<td>0.018</td>
<td>57</td>
</tr>
<tr>
<td>-12</td>
<td>-0.001</td>
<td>50</td>
<td>0.017</td>
<td>57</td>
</tr>
<tr>
<td>-11</td>
<td>0.007</td>
<td>52</td>
<td>0.024</td>
<td>59</td>
</tr>
<tr>
<td>-10</td>
<td>-0.006</td>
<td>47</td>
<td>0.018</td>
<td>56</td>
</tr>
<tr>
<td>-9</td>
<td>0.001</td>
<td>50</td>
<td>0.019</td>
<td>56</td>
</tr>
<tr>
<td>-8</td>
<td>0.010</td>
<td>55</td>
<td>0.029</td>
<td>59</td>
</tr>
<tr>
<td>-7</td>
<td>-0.007</td>
<td>46</td>
<td>0.022</td>
<td>58</td>
</tr>
<tr>
<td>-6</td>
<td>-0.008</td>
<td>46</td>
<td>0.014</td>
<td>56</td>
</tr>
<tr>
<td>-5</td>
<td>0.004</td>
<td>53</td>
<td>0.018</td>
<td>57</td>
</tr>
<tr>
<td>-4</td>
<td>-0.008</td>
<td>46</td>
<td>0.010</td>
<td>55</td>
</tr>
<tr>
<td>-3</td>
<td>-0.002</td>
<td>49</td>
<td>0.008</td>
<td>55</td>
</tr>
<tr>
<td>-2</td>
<td>0.007</td>
<td>52</td>
<td>0.015</td>
<td>57</td>
</tr>
<tr>
<td>-1</td>
<td>-0.001</td>
<td>49</td>
<td>0.014</td>
<td>56</td>
</tr>
<tr>
<td>0</td>
<td>-0.063</td>
<td>20</td>
<td>-0.049</td>
<td>39</td>
</tr>
<tr>
<td>1</td>
<td>-0.010</td>
<td>42</td>
<td>-0.059</td>
<td>37</td>
</tr>
<tr>
<td>2</td>
<td>0.006</td>
<td>52</td>
<td>-0.053</td>
<td>38</td>
</tr>
<tr>
<td>3</td>
<td>0.004</td>
<td>51</td>
<td>-0.049</td>
<td>39</td>
</tr>
<tr>
<td>4</td>
<td>-0.003</td>
<td>48</td>
<td>-0.052</td>
<td>39</td>
</tr>
<tr>
<td>5</td>
<td>0.004</td>
<td>52</td>
<td>-0.048</td>
<td>39</td>
</tr>
<tr>
<td>6</td>
<td>-0.007</td>
<td>47</td>
<td>-0.055</td>
<td>37</td>
</tr>
<tr>
<td>7</td>
<td>-0.002</td>
<td>49</td>
<td>-0.057</td>
<td>36</td>
</tr>
<tr>
<td>8</td>
<td>0.006</td>
<td>52</td>
<td>-0.051</td>
<td>38</td>
</tr>
<tr>
<td>9</td>
<td>0.007</td>
<td>54</td>
<td>-0.044</td>
<td>39</td>
</tr>
<tr>
<td>10</td>
<td>-0.004</td>
<td>48</td>
<td>-0.048</td>
<td>38</td>
</tr>
<tr>
<td>11</td>
<td>-0.001</td>
<td>50</td>
<td>-0.049</td>
<td>38</td>
</tr>
<tr>
<td>12</td>
<td>0.005</td>
<td>53</td>
<td>-0.044</td>
<td>39</td>
</tr>
<tr>
<td>24</td>
<td>-0.005</td>
<td>47</td>
<td>-0.051</td>
<td>37</td>
</tr>
<tr>
<td>36</td>
<td>-0.006</td>
<td>46</td>
<td>-0.048</td>
<td>36</td>
</tr>
</tbody>
</table>

3. Month −1. This month was examined, as it would appear from Tables I and II that there is some strong movement in the residuals of offeree firms.

4. Month 0. This is the month of the announcement and Tables I to IV indicate substantial movement in the residuals.

5. Month +1 to month +12. Examining the residuals in this period allows us to assess whether the stock market's initial assessment of takeovers is, on the average, correct. Research in the United States has reached differing findings as to whether residuals are negative or
positive in this period; some of the differences may be due to the different base dates used.

6. Month +13 to month +36. This period examines the longer term impact of takeovers on residuals performances. This period will include the release of several sets of annual accounts that will have reported the impact of the takeover (if successful) on the merged firms' profitability.

Table V gives the cumulative average residuals for each of the six periods, together with the portfolio t-statistic, for the four groups.
### TABLE V
Significance Tests for Average Monthly Portfolio Residuals

<table>
<thead>
<tr>
<th>Period</th>
<th>Offerees taken over</th>
<th>Offerees not taken over</th>
<th>Successful offerors</th>
<th>Unsuccessful offerors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. m-48 to m-13</td>
<td>-0.014</td>
<td>-0.018</td>
<td>0.018</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>(-0.083)</td>
<td>(-0.251)</td>
<td>(0.197)</td>
<td>(0.316)</td>
</tr>
<tr>
<td>2. m-12 to m-2</td>
<td>0.021</td>
<td>0.029</td>
<td>-0.003</td>
<td>-0.009</td>
</tr>
<tr>
<td></td>
<td>(0.910)</td>
<td>(0.726)</td>
<td>(-0.082)</td>
<td>(-0.092)</td>
</tr>
<tr>
<td>3. m-1</td>
<td>0.065</td>
<td>0.084</td>
<td>-0.001</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(5.423)</td>
<td>(6.171)</td>
<td>(-0.041)</td>
<td>(-0.037)</td>
</tr>
<tr>
<td>4. m 0</td>
<td>0.281</td>
<td>0.312</td>
<td>-0.063</td>
<td>-0.060</td>
</tr>
<tr>
<td></td>
<td>(31.070)</td>
<td>(31.866)</td>
<td>(-5.971)</td>
<td>(-5.545)</td>
</tr>
<tr>
<td>5. m+1 to m+12</td>
<td>0.010*</td>
<td>0.040</td>
<td>0.005</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>(0.011)</td>
<td>(1.015)</td>
<td>(0.051)</td>
<td>(2.128)</td>
</tr>
<tr>
<td>6. m+13 to m+36</td>
<td>-0.015</td>
<td>-0.004</td>
<td>-0.008</td>
<td>-0.051</td>
</tr>
<tr>
<td></td>
<td>(-0.344)</td>
<td>(-0.069)</td>
<td>(-0.051)</td>
<td></td>
</tr>
</tbody>
</table>

* Months +1, +2, +3, only.

Note. The first figure gives the cumulative average residual for the portfolio holding period. The second figure (in brackets) is the portfolio $t$-statistic ($PTSTAT$).

Tables I and II, relating to offeree firms, show a similar pattern of residuals up to and including the bid announcement. Up until one month prior to the bid, there was no evidence of any abnormal share price behavior, and this is confirmed by Table V, which shows that the portfolio $t$-statistics for periods 1 and 2 were not significant. Thus, there is no evidence of offeree firms being those that have suffered significantly poor share price performances in the four years prior to the bid; nor is there any evidence of successful anticipation of, or leaking of, the bid announcement in this period.

In month $-1$ the residuals jump sharply with more than 80 percent of the sample recording gains; Table V shows that these residuals (period 3) for samples 1 and 2 were statistically significant. Dodd and Ruback [1977] in their analysis of takeovers in the United States also found that most of the positive abnormal residuals for offerees prior to the bid announcement occurred in month $-1$. (However, Kummer and Hoffmeister [1978], in their study on takeovers in the United States, found no significant positive residuals for offerees until the announcement month.) The significant positive residual in month $-1$ reflects leakage of bid news or the build-up of a pre-acquisition share stake by the acquiring firm.

In month 0 the residuals rise substantially, reflecting the bid announcement. The residuals of 0.281 (Table I) and 0.312 (Table II) are highly significant and 99 percent of the securities recorded gains.
The two-month period of month \(-1\) and month \(0\) contained virtually all the share price adjustments due to the takeover offer.

Subsequent to month \(0\) the residuals for Table I do not deviate significantly from zero. The residuals for Table II, in the twelve months after the bid announcement tend to be positive, although they are not statistically significant. The positive residuals in this period will be reflecting any increased bid offers made by the offeror companies. In period month \(+13\) to month \(+36\), the residuals for Table II do not deviate significantly from zero; this shows that the gains made at the time of the takeover offer (and any subsequent revised bids) are maintained up to three years later, even though the bid was unsuccessful. (Dodd and Ruback [1977] also found similar results in the United States, i.e., the residuals were not statistically significantly different from zero in the period month \(+1\) to month \(+60\).) The maintenance of the gains will be reflecting (a) improved profitability of the firm that was set in motion to frustrate the bid; (b) any undervaluation of the offeree that the takeover highlighted; and (c) the possibility of future bids (there could be a large block of shares held by the unsuccessful offeror that could be used as a starting block for a future bid by the offeror or other firm). American research [Dodd and Ruback, 1977] and Australian research [Dodd, 1976] also found that offeree firms not taken over had substantial positive CARS in the years after the bid.

The behavior of the residuals subsequent to month \(0\) were consistent with an efficient market, i.e., the initial share price reaction gave unbiased estimates of future returns\(^4\) (analysis of the individual security residuals in Table II showed that the gains subsequent to month \(0\) were a function of revised or counter bids and of profit forecasts made as part of the bid defense by the offeree). Research in the United States has shown greater instability in the residuals subsequent to month \(0\), although these were still not statistically significant [Dodd and Ruback, 1977].

The residuals performance of the bidding companies is shown in Tables III and IV. Prior to the bid announcement there was no significant abnormal security price behavior associated with the bidding firms.\(^5\) This contrasts with research in the United States which has shown that acquiring firms tend to have recorded statisti-

---

\(^4\) Other tests on British takeovers, using daily data, were found to be consistent with market efficiency [Firth, 1976].

\(^5\) An earlier study by Franks, Broyles, and Hecht [1977], based on seventy U. K. takeovers in the brewing and distillery industry in the years 1955–1972, did find a positive residuals performance for acquiring firms, prior to the takeover announcement.
cally significant positive residuals in the twelve months prior to the bid [Dodd and Ruback, 1977]. Thus, the American research findings are consistent with firms experiencing better than expected prospects, making takeover bids—no such evidence was available from British takeovers.

In the month of the offer the bidding firms experienced negative residuals, and these were statistically significant. The percentage of securities showing negative residuals in this period was 80 percent (Table III) and 77 percent (Table IV). These results indicate that the stock market regards takeovers as being very expensive for the acquiring firm; the stock market presumably thinks that the benefits from the takeover (e.g., improvements in profitability, synergy, undervaluation of the offeree firm) are more than outweighed by the costs (e.g., the effort and uncertainty involved in reorganization, and the large bid premiums paid). The results contrast with American research which has shown that bidding firms experience significant positive returns upon the bid announcement [Dodd and Ruback, 1977; and Kummer and Hoffmeister, 1978].

Subsequent to the bid, the residuals for successful offerors settle down to their normal relationship with the market index. Thus, the losses incurred in month 0 have been sustained three years later. This implies that, on the average, the stock market's initial reaction to the implications of the bid for the successful offeror is correct; this is consistent with market efficiency. Research in the United States has shown mixed results when examining the residuals of successful acquirers subsequent to the bid announcement. Dodd and Ruback [1977] found positive residuals in the twelve months subsequent to the bid, although these were not statistically significant; in contrast Kummer and Hoffmeister [1978] found no abnormal residuals at all.

The British evidence points to the stock market taking a pessimistic view of takeovers for the acquiring firm, and this receives support from the analysis presented in Table IV. This shows that in the twelve months subsequent to the bid, the unsuccessful offerors earn positive returns, and these are statistically significant. Thus, as the bids fail, in the months after the offer, the stock market views this as good news and hence the positive residuals. In contrast, Dodd and Ruback [1977] found that unsuccessful offerors suffered negative

6. Direct comparison of the results in Tables I to V with other American research [Mandelker, 1974; Langetieg, 1978] is not possible as they have measured returns in relation to the effective date of the merger, and not the announcement of the takeover. Using the effective date of the merger makes it difficult to measure the gains-losses from takeovers, and it is impossible to examine market efficiency.
residuals in the period after the bid (although these were not statistically significant); this possibly reflects the resources expended in making the bid, for which no benefits accrue.\(^7\)

In the period month +13 to month +36 the residuals in Table IV did not deviate much from zero; again this is consistent with market efficiency. By month +36 the CAR, calculated from month -48, was -0.010, this showing that the takeover offer had virtually no impact on the unsuccessful offeror. In contrast the CAR for the successful offeror was -0.048. This indicates that completed takeovers result in reduced wealth for the acquiring firms’ shareholders.

IV. OVERALL GAIN-LOSS ANALYSIS

While the results from Tables I to V show that offerees made share price gains and that offerors made share price losses, these analyses do not show the overall gain-loss position of takeovers, and thus the stock market’s assessment of the overall impact of the merging of two firms. In order to examine for this, a separate analysis was made that measured the change in the market capitalization before and after the offer, of the offeree firm and the offeror firm, for each completed takeover. The change in the market capitalization was measured from month -1 to the month of the acceptance of the successful offer (i.e., this period includes revised and counter offers) for offeree firms. The changes were measured from month -1, as Table I and Table V showed that there was no evidence of any abnormal price behavior (i.e., no discounting of the bid) prior to month -1. A similar period was chosen for the successful offerors (although the residual in month -1 was not significantly different from zero and could therefore have been omitted). In some cases the offeror held a pre-acquisition share stake in the offeree and, in order to avoid double counting, the gain to the shares of the offeree firm already held by the offeror firm were deducted from the offeree firm’s gain.

Table VI shows the results of the analysis. Column 1 gives the overall results of the two merging firms; i.e., the mean gain-loss position from all the takeovers came to a loss of £36.6 million, and the number of overall losses came to 224 out of a total of 434 takeovers. Column 2 relates to the offeree firms and Column 3 to the offeror firms.

7. The evidence from Australia [Dodd, 1976] shows that successful offerors suffered large negative residuals in the period after the bid, while unsuccessful offerors suffered only small losses. Thus, the results from the Australian stock market are closer to those of the United Kingdom than to those from the United States.
TABLE VI
OVERALL GAIN-LOSS ANALYSIS

<table>
<thead>
<tr>
<th></th>
<th>1 Offeree-offeror combined</th>
<th>2 Offerees</th>
<th>3 Offerors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean gain-loss (£ millions)</td>
<td>-36.6</td>
<td>1,103.6</td>
<td>-1,140.2</td>
</tr>
<tr>
<td>Number of losses</td>
<td>224</td>
<td>3</td>
<td>350</td>
</tr>
<tr>
<td>Number of takeovers</td>
<td>434</td>
<td>434</td>
<td>434</td>
</tr>
</tbody>
</table>

The table shows that there is virtually a no-gain–no-loss position attached to takeovers in the United Kingdom in the period 1969–1975. This implies that the stock market is expecting little change in the profitability of firms once they have combined; any possible benefits in the form of synergy or reorganization of the acquired firm are presumably being countered by doubts of whether the offeror has access to management capable of greatly increasing efficiency, and because of the costs involved in the takeover process. Table VI shows that the gains accruing to the offeree firm are being directly canceled out by the losses to the offeror firm. The results from Table VI contrast with those from the United States, which show that there are overall gains to the merger process [Dodd and Ruback, 1977; Halpern 1973; and Mandelker, 1974]. Halpern’s study showed the gains on mergers to be divided approximately equally between offerees and offerors, while Dodd and Ruback and Mandelker found the gains accrued mainly to the offerees.

As the percentage losses (in the period month -1 to the month of the acceptance of the successful offer) suffered by the acquiring firms varied between companies, an analysis was made to see whether the level of these could be explained by various characteristics of the bid. The following variables can be hypothesized as having an influence on the residuals’ performance of acquiring firms:

1. The “premium” paid to the acquired firm expressed as a percentage of the acquiring company’s market capitalization prior to the bid (the beginning of month -1). The premium paid to the acquired firm is measured as the change in its market capitalization in the period month -1 to the month of the acceptance of the successful offer; as shown in Tables I and V the share price movements associated with takeovers are concentrated in the period month -1 to month +1. The reason for selecting this variable rests on the hypothesis that if, as is shown in Table V, there are no overall gains associated with takeovers, then the premium offered to the acquired firm can be re-
garded as an “overpayment” and by the efficient markets theory, we would expect the market capitalization of the acquiring firm to fall by a similar amount. Thus, we hypothesize an inverse relationship between the premium offered and the losses suffered by the acquiring firm, and that the regression coefficient will be $-1$.

2. The impact of the takeover on the acquiring firm’s earnings per share (e.p.s.). Professional investors and the financial press put a lot of emphasis on the changes in e.p.s. expected in the first year subsequent to the takeover, and decreases in e.p.s. usually receive negative publicity. The expected change in the earnings per share of the acquiring firm was calculated and expressed as a percentage of its e.p.s. figure immediately prior to the takeover. Our hypothesis is that the greater the expected negative change in e.p.s., the greater the negative residuals.

3. The impact of the takeover on the net assets per share of the acquiring firm. The arguments for this variable are similar to those for the e.p.s. variable described above; professional investors and the financial press place some importance on changes in net assets per share and decreases receive negative publicity. The expected change in the net assets per share of the acquiring firm was calculated and expressed as a percentage of its net assets per share figure immediately prior to the takeover. We hypothesize that the greater the expected fall in net assets per share, the greater the negative residuals for the firm.

4. The impact of the takeover on the acquiring firm’s debt-equity structure. Cases have been made out that an improvement in a firm’s capacity for raising new debt may result in gains for shareholders [Lewellen, 1971; and Lintner, 1971], and takeovers can result in substantial changes in a company’s debt-equity structure. Thus, the negative residuals of the acquiring firms may be influenced to some extent by deteriorating debt-equity structures. The debt-equity structure was calculated as the long-term debt divided by total long-term capital. The percentage change in this ratio was then calculated; an increase in the ratio represents deteriorating debt capacity, and this may be associated with negative residuals. Conversely, a decrease in the ratio represents greater capacity to raise new debt, and this may lead to positive residuals or lower negative residuals.

The results of regressing the above four variables against the residuals performance of the acquiring firms are shown in Table VII. The table shows that the relative size of the takeover premium had the greatest association with the residuals performance, and the regression coefficient of $-0.89$ was close to the hypothesized figure of
TABLE VII
THE FINANCIAL CHARACTERISTICS OF TAKEOVER BIDS AND THEIR IMPACT ON THE RESIDUALS PERFORMANCE OF ACQUIRING FIRMS

<table>
<thead>
<tr>
<th>Variable</th>
<th>Regression coefficient</th>
<th>t-value</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Relative size of premium</td>
<td>-0.89</td>
<td>-5.94</td>
<td>0.44</td>
</tr>
<tr>
<td>2. Change in e.p.s.</td>
<td>0.30</td>
<td>2.01</td>
<td>0.21</td>
</tr>
<tr>
<td>3. Change in net assets per share</td>
<td>0.07</td>
<td>0.74</td>
<td>0.06</td>
</tr>
<tr>
<td>4. Change in debt-equity structure</td>
<td>-0.06</td>
<td>-0.32</td>
<td>0.01</td>
</tr>
</tbody>
</table>

-1.0. This supports the view that the stock market expects zero benefits from a takeover, that the gains to the acquired firm represents an “overpayment,” and that the acquiring company’s shareholders will suffer corresponding losses. The earnings per share variable was also associated with the residuals performance; as hypothesized greater negative changes in e.p.s. are associated with greater negative residuals. The net assets per share and debt-equity structure variables appeared to have little or no association with the level of the residuals.

V. RETURNS TO MANAGEMENT FROM TAKEOVER ACTIVITY

The results from Sections III and IV showed that acquiring company shareholders suffered wealth losses through takeover activity, and thus although shareholder wealth maximization may have been the acquiring firm’s directors’ motive, this was certainly not the eventual outcome. A competing theory of the firm relates to the maximization of management utility, and this does not require shareholder wealth maximization as a necessary condition. A number of analyses can be carried out on the takeover data collected in this study that can be used as evidence that may be consistent with, or inconsistent with, maximization of management utility; this section of the paper deals with these tests.

Maximization of management utility is reflected in such things as salary levels and wealth accumulation, tenure of position, power, and job interest. The level of these factors can be increased by growth in corporate size alone, and takeovers are in general the most practical method of growing rapidly. Newbould [1970] has shown that directors face an increased risk of losing their jobs if their firm is taken over, and both Newbould [1970] and Singh [1975] have shown that the percentage chances of small firms being taken over is greater than for
large firms. Thus, to grow rapidly in size may benefit directors, and
managers, to the extent that it means their tenure of position is more
certain. Power, and job interest, will also likely increase with making
takeover acquisitions; the larger asset base, and the possibly more
varied activities resulting from the takeover, will allow greater scope
for the exercise of management skills. Salary levels and wealth accu-
mulation may also be affected by growth in size and takeover activity,
and the analyses below present some evidence on this factor.

Studies in both Britain and the United States have shown that
the remuneration levels of directors and senior management are
mainly a function of the size of the employing firm, and that profit-
ability has a much smaller influence. Thus, the greater the amount
of assets that management controls, the higher their remuneration.
In view of this, senior management may desire growth in company size
so as to increase their salary levels, and this could be one behavioral
motive behind making takeover bids. The Companies Acts 1948 and
1967 requires certain disclosures to be made, relating to directors' and
senior managements' remuneration, in a firm's annual report. One
item that has to be disclosed is the remuneration of the highest paid
director or chairman (Companies Act, 1967), and this information was
extracted for the study. Specifically, we set out to examine whether
the highest paid director's remuneration increased by an "excep-
tional" amount following a takeover.

The percentage increase in the highest paid directors' remu-
neration for each firm was calculated over the period beginning with
the annual report immediately prior to the takeover, to the annual
report two years later (thus allowing for increases in directors' rem-
uneration in the year of the acquisition and one year later). This
percentage was then compared with a yardstick to see whether it
represented an exceptional increase. The two yardsticks used were
the following:

a. The percentage increase in the highest paid directors’ remu-

8. For evidence see the studies by Cosh [1975], and Meeks and Whittington [1975]
in the United Kingdom; and McGuire, Chui, and Elbing [1962], and Roberts [1956,
and Huntsman, 1970] has suggested that profitability is an important determinant
of managerial remuneration; Yarrow [1972] and Meeks and Whittington [1975], how-
ever, have queried the conclusions drawn by Lewellen and Huntsman.

9. Aggregate directors' remuneration was not used, since in many cases the number
of directors increased due to the bid (the directors of the acquired firm are sometimes
invited to join the board of the acquiring firm. This can be used to induce the offeree
firm's directors to recommend acceptance of the bid). Thus, the aggregate directors'
remuneration does not necessarily reflect the "rewards" to the directors who initiated
the bid. Similar problems exist with measuring senior managements' remuneration.
Another way of analyzing the impact of takeovers on directors' and senior manage-
ments' remuneration would be to calculate the average pay per director or manager.
neration over the same two-year period for a control company. Thus, each acquiring firm is matched with a non-acquiring firm in the same industry, which is of similar size, and where the absolute size of the highest paid directors’ remuneration at the beginning of the period is similar.

b. The percentage increase in the highest paid director's remuneration over the same two-year period for all non-acquiring firms.

A t-test was used to examine whether the mean percentage change in directors’ remuneration of acquiring firm was significantly different from the percentage change in directors’ remuneration of the control groups. Initially we conducted the test using directors’ remuneration in the two-year period prior to the takeover; the results showed there to be no statistically significant differences, and thus away from the takeover the percentage change in directors’ remuneration for the groups were very similar. Using the period surrounding the takeover, however, resulted in substantial differences. The mean percentage increase in remuneration levels for the two-year period, for acquiring firms came to 33 percent, and the mean percentage increases for control group (a) was 20 percent and for control group (b), 19 percent. These differences were statistically significant at the 0.05 level.

A regression analysis was carried out on the data to examine whether the percentage increase in remuneration was associated with the percentage growth in assets of the acquiring firm. The coefficient of the growth in assets variable was positive (0.746) and significant (t-value = 2.75), thus showing that the larger the increase in the firm’s assets, the greater the increase in directors’ remuneration. The analyses have therefore shown that, while takeovers have resulted in losses to shareholders, they have resulted in monetary benefits to directors (and there is no reason to believe that this was not extended to senior management).

In many companies directors have large shareholdings, and it is of interest to examine whether this leads to different views on, and outcomes of, takeovers. A case can be made out for directors with large shareholdings (termed LS) acting more in the interests of shareholders (i.e., shareholder wealth maximization), than do directors whose main income-wealth source comes from remuneration. If so, this might suggest that LS firms engage in fewer takeovers (as takeovers, in general, lead to losses for acquiring company shareholders), and that the takeovers that are made are more successful than those made by firms whose directors have little or no shareholding interest (termed NS).
The first test set out to examine whether LS firms had a lower incidence of takeover activity. The major problem in this analysis was to settle upon a definition of LS firms and NS firms. The following arbitrary yardstick was eventually chosen: an LS firm was defined as one where the total directors' shareholdings came to at least 15 percent of the issued ordinary shares of the firm, or the absolute value of the directors' shareholdings came to at least £1.0 million, or both. This definition incorporated both a relative and an absolute measure of the extent of directors' shareholdings. These measures were calculated using data prior to the takeover. Firms that did not fit into the category of LS were classified as NS. The mean percentage of LS firms who made takeover bids in each year came to 3.1 percent, and the mean figure of NS firms making bids in each year came to 4.4 percent. This result indicates that firms whose directors have large shareholdings tend to make fewer takeovers; this may be because they have a stronger view that takeovers do not result in any share price benefits, and that this is an overriding consideration in their decision making (another possible reason, of course, is that the directors may not want to lower their proportionate ownership of the firm). It must be recognized that the definition of the LS firm was arbitrarily set.

A regression analysis was conducted to see whether the residuals' performance of acquiring firms was dependent upon the percentage change in the highest paid director's remuneration and the shareholdings of directors. A case can be made out for associating greater percentage increases in remuneration with greater negative residuals (up to some point—beyond this we might expect remuneration to fall). Conversely a case can be made out for associating greater absolute levels of director shareholdings with lower levels of negative residuals (assuming that directors are motivated by the impact of the takeover on their own assets).

The results of the regression were

\[
\text{Residual} = -1.817 - 0.435DR + 0.084DS \quad R^2 = 0.11
\]

where \(DR\) equals percentage change in directors' remuneration, \(DS\) equals absolute value of director shareholdings in £ millions, and the figures in brackets are \(t\)-values.

The remuneration variable was statistically significant and negative, showing that higher percentage increases in remuneration levels were associated with higher negative returns to shareholders. Thus, the evidence indicates that the poorer a takeover is for acquiring firm shareholders, the better it is for acquiring firm directors! The
directors' shareholdings variable had a positive regression coefficient, but this was not significantly different from zero. The level of directors' shareholdings does therefore appear to be associated with the level of the residuals.

VI. SUMMARY AND CONCLUSIONS

The research set out to analyze the impact of takeovers on shareholder returns and on the benefits to management. The acquired firms' shareholders were found to have made large gains from takeovers. However, in contrast, the acquiring companies' shareholders suffered losses that slightly more than offset the gains to the acquired firms. The stock market viewed takeovers as having little overall impact on corporate profitability, but that takeovers significantly reduced the value of the acquiring firm. Analyses were also made of the impact of takeovers on the remuneration levels of directors and it was found that they resulted in exceptional increases. Thus, takeovers were found to benefit the acquiring firms' directors, but were positively harmful to their shareholders. This evidence is consistent with takeovers being motivated by maximization of management utility reasons. If management is being motivated, instead, by the alternative theory of shareholder wealth maximization, then they have clearly erred in their judgments of specific takeover acquisitions.

Victoria University of Wellington

REFERENCES

Firth, M. A., Share Prices and Mergers (Westmead, Farnborough: Saxon House, 1976).
TAKEOVERS AND SHAREHOLDER RETURNS 259


You have printed the following article:

Takeovers, Shareholder Returns, and the Theory of the Firm
Michael Firth
Stable URL: http://links.jstor.org/sici?sici=0033-5533%28198003%2994%3A2%3C235%3ATSRATT%3E2.0.CO%3B2-C

This article references the following linked citations. If you are trying to access articles from an off-campus location, you may be required to first logon via your library web site to access JSTOR. Please visit your library's website or contact a librarian to learn about options for remote access to JSTOR.

[Footnotes]

5 *An Industry Study of the Profitability of Mergers in the United Kingdom*  
J. R. Franks; J. E. Broyles; M. J. Hecht  
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197712%2932%3A5%3C1513%3AAISOTP%3E2.0.CO%3B2-N

8 *The Remuneration of Chief Executives in the United Kingdom*  
Andrew Cosh  
Stable URL: http://links.jstor.org/sici?sici=0013-0133%28197503%2985%3A337%3C75%3ATROCEI%3E2.0.CO%3B2-F

8 *Directors' Pay, Growth and Profitability*  
Geoffrey Meeks; Geoffrey Whittington  
Stable URL: http://links.jstor.org/sici?sici=0022-1821%28197509%2924%3A1%3C1%3ADPGAP%3E2.0.CO%3B2-J

8 *Executive Incomes, Sales and Profits*  
Joseph W. McGuire; John S. Y. Chiu; Alvar O. Elbing  
Stable URL: http://links.jstor.org/sici?sici=0002-8282%28196209%2952%3A4%3C753%3AEISAP%3E2.0.CO%3B2-0

NOTE: The reference numbering from the original has been maintained in this citation list.
8 A General Theory of Executive Compensation Based on Statistically Tested Propositions
David R. Roberts
Stable URL: http://links.jstor.org/sici?sici=0033-5533%28195605%2970%3A2%3C270%3AAGTOEC%3E2.0.CO%3B2-Y

8 Managerial Pay and Corporate Performance
Wilbur G. Lewellen; Blaine Huntsman
Stable URL: http://links.jstor.org/sici?sici=0002-8282%28197009%2960%3A4%3C710%3AMPACP%3E2.0.CO%3B2-1

8 Directors' Pay, Growth and Profitability
Geoffrey Meeks; Geoffrey Whittington
Stable URL: http://links.jstor.org/sici?sici=0022-1821%28197509%2924%3A1%3C1%3AOGAP%3E2.0.CO%3B2-J

References

_The Remuneration of Chief Executives in the United Kingdom_
Andrew Cosh
Stable URL: http://links.jstor.org/sici?sici=0013-0133%28197503%2985%3A337%3C75%3AOREC%3E2.0.CO%3B2-F

_Mergers, Antitrust Law Enforcement and Stockholder Returns_
James C. Ellert
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197605%2931%3A2%3C715%3AMALE%3E2.0.CO%3B2-L

NOTE: The reference numbering from the original has been maintained in this citation list.
Efficient Capital Markets: A Review of Theory and Empirical Work
Eugene F. Fama
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197005%2925%3A2%3C383%3AECMARO%3E2.0.CO%3B2-V

Synergism in Mergers: Some British Results
Michael Firth
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197805%2933%3A2%3C670%3ASIMSBR%3E2.0.CO%3B2-4

An Industry Study of the Profitability of Mergers in the United Kingdom
J. R. Franks; J. E. Broyles; M. J. Hecht
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197712%2932%3A5%3C1513%3AISOTP%3E2.0.CO%3B2-N

Empirical Estimates of the Amount and Distribution of Gains to Companies in Mergers
Paul J. Halpern
Stable URL: http://links.jstor.org/sici?sici=0021-9398%28197310%2946%3A4%3C554%3AAEOTAA%3E2.0.CO%3B2-V

An Empirical Test for Synergism in Merger
Robert A. Haugen; Terence C. Langetieg
Stable URL: http://links.jstor.org/sici?sici=0022-1082%28197509%2930%3A4%3C1003%3AAETFSI%3E2.0.CO%3B2-O

Rates of Return to Stockholders of Acquired Companies
Robert A. Haugen; Jon G. Udell
Stable URL: http://links.jstor.org/sici?sici=0022-1090%28197201%297%3A1%3C1387%3ARORTSO%3E2.0.CO%3B2-D

**NOTE:** The reference numbering from the original has been maintained in this citation list.
The Profitability of Corporate Mergers
Thomas F. Hogarty
Stable URL:
http://links.jstor.org/sici?sici=0021-9398%28197007%2943%3A3%3C317%3ATPOCM%3E2.0.CO%3B2-J

Valuation Consequences of Cash Tender Offers
Donald R. Kummer; J. Ronald Hoffmeister
Stable URL:
http://links.jstor.org/sici?sici=0022-1082%28197805%2933%3A2%3C505%3AVCOCTO%3E2.0.CO%3B2-%23

The Microeconomic Consequences of Corporate Mergers
Baruch Lev; Gershon Mandelker
Stable URL:
http://links.jstor.org/sici?sici=0021-9398%28197201%2945%3A1%3C85%3ATMCOCM%3E2.0.CO%3B2-W

A Pure Financial Rationale for the Conglomerate Merger
Wilbur G. Lewellen
Stable URL:
http://links.jstor.org/sici?sici=0022-1082%28197105%2926%3A2%3C521%3AAPFRFT%3E2.0.CO%3B2-0

Managerial Pay and Corporate Performance
Wilbur G. Lewellen; Blaine Huntsman
Stable URL:
http://links.jstor.org/sici?sici=0002-8282%28197009%2960%3A4%3C710%3AAPACMP%3E2.0.CO%3B2-1

Expectations, Mergers and Equilibrium in Purely Competitive Securities Markets
John Lintner
Stable URL:
http://links.jstor.org/sici?sici=0002-8282%28197105%2961%3A2%3C101%3AEMAEIP%3E2.0.CO%3B2-3

NOTE: The reference numbering from the original has been maintained in this citation list.
Mergers and the Market for Corporate Control
Henry G. Manne
Stable URL:
http://links.jstor.org/sici?sici=0022-3808%28196504%2973%3A2%3C110%3AMATMFC%3E2.0.CO%3B2-3

Executive Incomes, Sales and Profits
Joseph W. McGuire; John S. Y. Chiu; Alvar O. Elbing
Stable URL:
http://links.jstor.org/sici?sici=0002-8282%28196209%2952%3A4%3C753%3AEISAP%3E2.0.CO%3B2-0

Directors' Pay, Growth and Profitability
Geoffrey Meeks; Geoffrey Whittington
Stable URL:
http://links.jstor.org/sici?sici=0022-1821%28197509%2924%3A1%3C1%3ADPGAP%3E2.0.CO%3B2-J

A Theory of Conglomerate Mergers
Dennis C. Mueller
Stable URL:
http://links.jstor.org/sici?sici=0033-5533%28196911%2983%3A4%3C643%3AAEJOCM%3E2.0.CO%3B2-2

A General Theory of Executive Compensation Based on Statistically Tested Propositions
David R. Roberts
Stable URL:
http://links.jstor.org/sici?sici=0033-5533%28195605%2970%3A2%3C270%3AAITOE%3E2.0.CO%3B2-Y

A Simplified Model for Portfolio Analysis
William F. Sharpe
Stable URL:
http://links.jstor.org/sici?sici=0025-1909%28196301%299%3A2%3C277%3AAMFPA%3E2.0.CO%3B2-7

NOTE: The reference numbering from the original has been maintained in this citation list.
Take-overs, Economic Natural Selection, and the Theory of The Firm: Evidence from the Postwar United Kingdom Experience

Ajit Singh


Stable URL:

http://links.jstor.org/sici?sici=0013-0133%28197509%2985%3A339%3C497%3ATENSAT%3E2.0.CO%3B2-A

Financial Characteristics of Merged Firms: A Multivariate Analysis

Donald L. Stevens


Stable URL:

http://links.jstor.org/sici?sici=0022-1090%28197303%298%3A2%3C149%3AFCOMFA%3E2.0.CO%3B2-F

NOTE: The reference numbering from the original has been maintained in this citation list.