# THE TAKEOVER PREMIUM: WEALTH CREATION AND DISTRIBUTION

## Adrian Blackshields and Ray Donnelly

*University College Cork*

## ABSTRACT

*We posit that the premium paid on acquisition has two elements: the gain created by the acquisition and the portion of this gain that is captured by the target shareholders. The former derives from synergies and the replacement of inefficient incumbent management in the target. The latter is a function of agency considerations and aspects of the takeover deal. Our empirical results provide evidence that the market for corporate control is a primary determinant of value creation. We also provide evidence that the bargaining strength of the target shareholders impacts on the portion of the gains they procure for themselves.*

## INTRODUCTION

It is generally accepted that acquisitions in the US are wealth-creating (Jensen and Ruback, 1983; Servaes, 1991). Sudarsanam, Holl and Salami (1996) report similar evidence for the UK. Prior to the latter study empirical research in the UK had failed to find any clear evidence of such value added (Limmack, 1991; Sudarsanam, 1995). What is evident, from both US and UK studies, is that the shareholders of the target company gain. These gains come in the form of the acquisition premium: the difference between the price paid for the target and its pre-bid price. This paper seeks to explain the premium in terms of (a) the overall gains from the takeover and (b) the distribution of these gains between bidder and target shareholders. Thus, it touches on two fundamental questions regarding takeovers: the sources of takeover gains and the factors which determine who procures these gains.

The sources of acquisition gains are far from clear. It is suggested that gains come from either synergy or the discipline induced by the market for corporate control. In the latter case, the stock market exposes inefficient management through a reduced share price. The bidder can then afford a takeover premium, provided that its management will rectify the inefficiencies of the target's incumbent team.

As well as being related to the acquisition gains, takeover premia are also posited to be related to the relative bargaining strength of the target and bidder. Any factor that increases the relative bargaining strength of the target, other things being equal, will increase the premium. However, if the bidder's management is rational and acts in the interests of its shareholders, the total of the acquisition gains will put an absolute cap on the premium. The bargaining position of the companies involved will depend on, inter alia, agency considerations arising from the ownership structure of both firms.

With the exception of Sudarsanam et al.'s (1996) study covering the period 1980–1990, there is little empirical evidence on the motives for UK takeovers. The latter study investigates the abnormal returns to the target's and bidder's shareholders around the bid announcement. However, this study differs from that of Sudarsanam et al. in a number of crucial respects. First, we seek to explain the takeover premium whereas Sudarsanam et al. aim to explain the abnormal returns that accrue to the target's shareholders in the event period. Secondly, the sample for our study comes from the most recent merger wave. This may be important since shareholder activism in the UK has increased significantly in the 1990s. We outline below why this may cause our results to differ somewhat from those of Sudarsanam et al. Thirdly, while Sudarsanam et al. concentrate on synergy and agency factors to explain the wealth effects of takeovers, the focus in this study is to investigate the relative importance of wealth creation or wealth distribution (redistribution) in explaining the takeover premium. Finding evidence of the former having controlled for wealth distribution will provide some evidence pertaining to the motives for takeovers in the UK. Most studies of this type are based on US samples. Thus, while updating these studies using more recent data we also redress the balance somewhat by providing some non-US evidence.

The paper proceeds as follows: prior literature is reviewed in the next section. The third section outlines and justifies the variables used to explain the variance in the acquisition premium. The following section

outlines the data. Our results are reported in the fifth section, and a conclusion follows.

## PRIOR LITERATURE

Indirect evidence pertaining to the premium paid on acquisition comes from the literature on shareholder wealth effects. Jensen and Ruback (1983) suggest that acquisitions are wealth creating, that the target's shareholders gain and the bidder's shareholders do not lose. Limmack (1991) reports similar results for the UK if one confines the analysis to the period from the bid month to the month in which the bid is consummated. However, when the post-outcome period is included in the analysis of bidder returns the latter lose and there is no net benefit from takeover activity in the UK. Limmack's evidence would suggest that the relative bargaining power of the bidder and target should explain more of the variance in acquisition premia than variables designed to proxy for synergy or managerial underperformance. Direct UK evidence comes from Kuehn (1975). He argues that the bid premium is determined by the relative financial strengths of the bidder and target. Kuehn finds that the bidder's (target's) profitability is positively (negatively) related to the premium. His model explains just less than six per cent of the variance in the acquisition premium.

Sudarsanam et al. (1996) investigate the factors that determine the wealth gains to the shareholders of targets in the UK. They do not attempt to explain the takeover premium, but measure the wealth effect of the takeover on the target's shareholders as the Cumulative Abnormal Return (CAR) from days –20 to +40 surrounding the announcement date. Sudarsanam et al. group their explanatory variables into Synergy, Agency and Control variables. They report that operating synergy, relative performance, toeholds and the method of payment are related to the target shareholders' gains as predicted.

Most research that uses multivariate analysis to explain the cross-sectional variance of the actual acquisition premium is US-based. Melicher and Nielsen (1977) use stepwise regression in an attempt to explain the premia paid in a sample of US acquisitions completed in the 1960s. This was a period when large conglomerate acquisitions were fashionable. Melicher and Nielsen report that the acquisition premium is positively related to the increase in size effected by the takeover, the Price/Earnings ratio (P/E) of the bidder divided by the P/E of the target

and negatively related to the correlation between Earnings per Share (EPS) of both firms. This evidence is consistent with the wave of conglomerate acquisitions in the period studied in that bidders favour targets in unrelated businesses with lower P/E ratios than themselves.

The variables used by Ferris, Melnik and Rappaport (1977) to explain tender offer premia for 50 US takeovers in 1975–76 do not include any designed to capture synergy. They find that the premium increases in the dispersion of target ownership and decreases in the ownership of the bidder in the target prior to acquisition. The latter result anticipates the analysis of Grossman and Hart (1980). Ferris et al.'s models explain a respectable 57 per cent of the premium variance. Walkling and Edminster (1985) develop a model designed to capture economies of scale, target underpricing and bargaining strength. They report that the premium is negatively related to the target's gearing, its market-to-book ratio and the percentage of the target held by the bidder prior to the bid. It is positively related to the presence of a rival bidder. Slusky and Caves (1991) attempt to build a comprehensive model to explain cross-sectional variation in acquisition premia. They find that real synergies do not help explain the variance in the acquisition premium. They report evidence that the premium is related to financial synergy, agency considerations and arbitrage between real and financial assets. When an interactive variable for the presence or otherwise of a rival bid is included in the model it explains about 22 per cent of the premium variance. Slusky and Caves (1991) interpret what they consider to be this low $R^2$ as evidence of the omission of important independent variables from the model.

Servaes (1991) uses Tobin's q to explain the gains to the target's shareholders. He uses dummy variables to indicate whether a company can be classified as having a high or low q ratio. Consistent with Lang, Stulz and Walkling (1989), Servaes finds that the best takeovers in terms of gains to the target, bidder and overall occur when a high q company acquires a low q company. These relations are maintained after controlling for relative size of the companies, method of payment, time and the presence of rival bidders.

The objective of the current study is to determine whether both value creation and value distribution contribute to the explanation of the takeover premium. Further, we investigate in what way each of these two factors contribute to explaining the cross-sectional variance in the
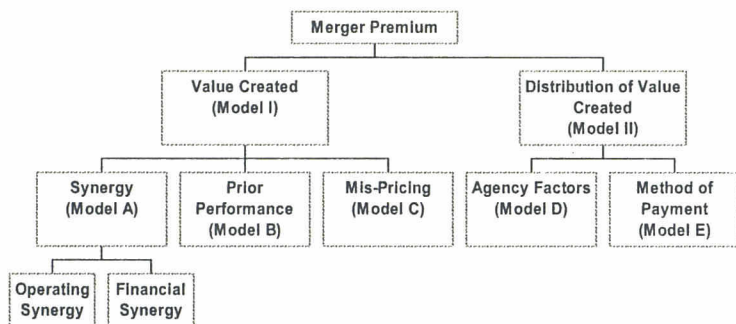
acquisition premium. For example, we are interested in whether value creation comes from synergy or from prior performance


## HYPOTHESES DEVELOPMENT

The acquisition premium can be described as the capital gain arising from the takeover that is attributable to the target's shareholders. It determines the share of acquisition gains, if any exist, that this group procures. We propose that both the wealth creation and wealth distribution effects of the takeover determine this premium (see **Figure 1**). The former are characterised as being related to synergy (both operational and financial), the effectiveness of both the bidder's and especially the target's management teams and possibly mis-pricing of the target's equity. The distribution of wealth between the parties to the deal, the shareholders of the target and bidder, will depend on their respective bargaining strengths.

Acquisition gains are considered to come from either synergy or shifting control of assets from inefficient management. Synergy implies that the target is worth more as part of the bidder than as a stand-alone company. Thus, it is worth more to the bidder than its current market price. If the target's incumbent management team is inefficient this will be reflected in standard accounting measures of performance as well as in a relatively low pre-bid market price[1]. A low pre-bid price (implying a higher premium) could also be the result of a failure by the market to appreciate the true worth of the share. Thus, separation of the effect of managerial underperformance from mis-pricing by the stock market may not be straightforward. These arguments are summarised in **Figure 1** (Model I) and its constituent Models A, B and C.

The determinants of the portion of the gains, if any, procured by the target's shareholders will also affect the premium. The stronger their bargaining position, the bigger the premium expected. Both the target's and the bidder's shareholders will be represented in the takeover negotiations by their respective management teams. Any factor that gives the shareholders of the target (bidder) more control over their management increases (decreases) the price paid and hence the premium. The wealth distribution effects of the takeover are summarised in **Figure 1** by Model II and its constituent Models D and E.

## Figure 1: Determinants of Acquisition Premium



Each of the Models A to E, in **Figure 1,** can be represented by various empirical proxies. We now consider each of the models in turn and justify our empirical proxies for that model.

*Synergy (Model A)*

Synergies can be operational or financial. The former refers to the more efficient or effective use of assets. These synergies are more likely to be realised in vertical or horizontal acquisitions and less likely to occur in conglomerate acquisitions. It is posited that the acquisition premium will be greater if both the bidder and target operate in the same industry class. Another source of operational synergy comes from economies of scale. This suggests that acquisition premia should be increasing in the size of both the bidder and the target as well as the relative size of the target to the bidder. We use a dummy variable that takes the value of one when the bidder is in the same industry class as the target and zero otherwise as a proxy for the operational synergies of horizontal mergers. We use the size, measured as assets employed, and relative size of the bidder and target to proxy for economies of scale.

Financial synergies may arise if either the bidder or the target has unused debt capacity. The combined firm may use this excess capacity to generate additional tax shields and value. The absolute difference between the gearing levels of the target and the bidder will provide an indication of unused debt capacity on the part of either. The first and second rows of **Table 1** summarise our operational and financial synergy variables respectively.

*Underperformance (Model B)*

If management of the target firm is inefficient this will depress its share price below the level it would trade at if properly managed. Thus, a bidder may procure a bargain by taking over a company that is priced on the basis of the continued stewardship of its incumbent management and replacing them by a more efficient management team. Managerial performance can be measured using the return on capital employed generated by both target and bidder management teams prior to the acquisition. Clues as to the relative abilities of the management teams can be gleaned from the difference in this ratio between both teams. The acquisition premium is predicted to be positively related to prior underperformance of the target. It may also be related to the expected level of performance of the management team of the bidder.

Managerial underperformance will also be reflected in the price of a firm's securities. Servaes (1991) points out that Tobin's q can be interpreted as a measure of managerial performance. Lang *et al.* (1989) provide evidence that returns to targets are higher when targets have low q ratios (<1) and bidders high q ratios (>1). This suggests that the relative performance of targets and bidders as measured by q is a potentially useful explanatory variable for the cross-section variance of the takeover premium. We construct a broad measure of the relative performance of the target and bidder as the bidder's q ratio divided by the target's q ratio. Row 3 of **Table 1** details our measurements of prior performance which are designed to identify the abilities in absolute and relative terms of the bidders' and targets' management teams. The precise definitions of the empirical proxies are outlined in the final column of **Table 1**.

*Mis-pricing (Model C)*

The pre-bid price of the target may be below its equilibrium level if the bidder management has information not available to the market in general, or if the market is inefficient. There is evidence that the market-to-book (MTB) ratio of equity is related to mis-pricing (Billings and Morton, 1999). Walkling and Edminster (1985) use MTB as proxy for underpricing of the target and find, as predicted, that it is negatively related to takeover premium.

*Agency Factors (Model D)*

It is axiomatic that the target's shareholders will procure more of the net benefit from the acquisition the stronger their bargaining position. The negotiating strength of the target or bidder is likely to be influenced by agency considerations. The acceptance of the bid by the target's shareholders may be influenced by the ownership structure of the target. A company with diffuse external ownership is likely to afford management more latitude to indulge in non-value creating behaviour. Thus, the more diffuse a target's outside shareholdings the lower its pre-bid value and the greater the premium. However, when a takeover bid is actually launched the power of directors and large blocks may increase the bargaining power of the target. This implies a negative relation between diffuseness of the target's ownership structure and the premium. Thus, the sign of the relation between the ownership structure and the takeover premium will depend on whether it proxies for pre-bid performance or the agency effect on takeover negotiations. We use measures of concentration in the target's shareholding to proxy for the alignment of interest between a target's management and its shareholders. The three measures that we use, TAR>3 per cent, TARDIR and TARCON, measure the percentage of the target owned by outside blockholders, directors and the sum of both (see **Table 1** for details). We expect the empirical analysis to resolve whether the concentration in the target's ownership affects the pre-bid performance or its bargaining strength in the takeover negotiations, thus TARCON and its sub-elements are the only variables in **Table 1** for which the sign of their relation with the acquisition premium is not predicted.

When making a takeover bid, the management of the bidder is acting on behalf of its shareholders. The management suggests and negotiates the price to be paid and the shareholders pay. The latter are most interested in reducing the amount paid but the former may have other motivations. The more closely aligned the interests of the bidder's management and its shareholders the smaller the bid premium. This alignment of interests is likely to be increasing in managerial ownership and concentration of outside ownership in the bidder. **Table 1** indicates that we anticipate a negative relation between the managerial and concentrated ownership in the bidder and the premium. **Table 1** explains that BID>3 per cent, BIDDIR and BIDCON are the equivalents for bidders to TAR>3 per cent, TARDIR and TARCON as described above.

## Method of Payment (Model E)

One aspect of the deal that is easily quantified is the method of payment. Payment in cash may signal that the bidder is cash rich or that it can afford to pay more. Both of the above serve to reduce the bargaining position of the bidder. If the consideration is in the form of cash, the target's shareholders will immediately be liable for capital gains tax and may demand a higher price to compensate for this. Accordingly, a cash consideration is predicted to be positively related to the premium paid.

Bidders prefer to use shares when there is significant uncertainty regarding the return from the takeover (Brealey and Myers, 2000). Using shares will ensure that any shortfall from expected benefits from the takeover is shared with the target's shareholders. When there is substantial uncertainty regarding the benefits from the takeover and the bidder has sufficient bargaining strength shares alone will be used as consideration and the premium reduced. Thus, we predict a negative relation between the premium and consideration in the form of shares.

The bidder may obtain a toehold interest in the target prior to launching a bid. Grossman and Hart (1980) develop a model that predicts that more of the takeover gain goes to the bidder when it has acquired a toehold in the target. When a toehold position is procured it will increase the probability of a bid and hence the pre-bid price.

The arguments pertaining to the relation between the method of payment and the takeover premium are summarised in the final row of **Table 1**. **Table 1** explains that dummy variables are used to represent each of the characteristics of the deal described above. A negative relation between the takeover premium and our toehold dummy variable is suggested.

## Table 1: Summary and Definition of Variables Hypothesised to Predict Acquisition Premia

| Factor/Model | Purpose of Inclusion | Independent Variable Predicted Sign ( ) | Definition of Independent Variables |
|---|---|---|---|
| **Operational Synergies (Model A)** | The industry dummy investigates whether being a conglomerate or a non-conglomerate combination impacts on the premium paid. | **INDUSTRY (+)** | A dummy variable set equal to one if both companies are from the same industry. |
| | The purpose of the size variables is to examine how potential economies of scale affect the premium paid. | **L(TARSIZE) (–)** | The natural logarithm of the size of the target firm, measured by assets employed as at the last year-end prior to the announcement of a bid. |
| | | **L(BIDSIZE) (+)** | The natural logarithm of bidder size, measured by assets employed as of the last year-end prior to the announcement of a bid. |
| | | **TSIZE/BSIZE (–)** | The size of the target divided by the size of the bidder. |
| **Financial Synergies (Model A)** | The purpose of this variable is to investigate how potential financial synergies impact on the premium paid. | **ABSBTLEV (+)** | The absolute value of the leverage ratio of a bidder minus that of its target. |

| Factor/Model | Purpose of Inclusion | Independent Variable Predicted Sign ( ) | Definition of Independent Variables |
|---|---|---|---|
| Managerial Underperformance (Model B) | The return on capital employed (ROCE) variables investigate whether the prior operating performance of managers affects the premium. | TARAVGROCE (–) | The target's average return on capital employed over the three-year period leading up to the announcement of an acquisition bid. |
| | | BIDAVGROCE (+) | The bidder's average return on capital employed over the three-year period leading up to the announcement of an acquisition bid. |
| | | DIFAVGROCE (+) | The average return on capital employed of a bidder over the three-year period leading up to the announcement of a bid, minus the same figure for its target. |
| | The q variables also investigate how the prior performance of both the target and the bidder impacts on the premium paid. However, these measures incorporate a stock market evaluation of performance. | BIDQ (+) (TARQ) (–) | The bidder's (target's) market value of equity plus its book value of debt divided by the book value of total assets. The market value is calculated at 30 days before announcement of the bid. The book value is the assets employed as of the last year-end prior to the bid announcement. |
| | | BIDQ/TARQ (+) | The bidder's q ratio divided by the target's q ratio. |

| Factor/Model | Purpose of Inclusion | Independent Variable Predicted Sign ( ) | Definition of Independent Variables |
|---|---|---|---|
| Market Mis-pricing (Model C) | The market-to-book of the target purports to investigate how mis-pricing of that firm impacts on the premium paid. | MTBTAR (+) | The target's market equity to book equity ratio. The market value is calculated at 30 days before the announcement of the bid. The book value of equity is as at the last year-end prior to the bid announcement. |
| | The relative market-to-book simply casts the mis-pricing in comparative terms. | MTBT/MTBB (+) | The market equity to book equity ratio of the target, as defined above, divided by the market-to-book ratio of the bidder, similarly defined. |
| Bargaining Power Agency Factors (Model D) | The purpose of these variables is to examine the effect that managerial and large external shareholdings, in both the target and the bidder, have on the premium paid. | TAR>3% (?) | The sum of outside shareholdings of over 3% in the target. |
| | | TARDIR (?) | The percentage of equity owned by directors in the target firm. |
| | | TARCON (?) | TARCON = Tar>3% + TARDIR |
| | | BID>3% (–) | The sum of outside shareholdings of over 3% in the bidder. |
| | | BIDDIR (–) | The percentage of equity owned by directors in the bidding firm. |
| | | BIDCON (–) | BIDCON = BID>3% + BIDDIR |

| Factor/Model | Purpose of Inclusion | Independent Variable Predicted Sign ( ) | Definition of Independent Variables |
|---|---|---|---|
| **Bargaining Power Method of Payment (Model E)** | This variable aims to show how a bidder's prior equity interest in the target affects the premium paid. | TOEHOLD (–) | The prior equity interest, in terms of percentage owned, of the bidder in the target. |
| | These dummy variables purport to investigate how the form of payment affects the premium | ALLCASH (+) | A dummy variable set equal to one if the consideration is solely in cash. |
| | | SHARES (–) | A dummy variable set equal to one if the consideration is solely equity based. |

The research question posed in this paper concerns the importance of wealth creation and wealth distribution as determinants of the takeover premium. **Figure 1** details how wealth creation can be decomposed into three factors which we term synergy, underperformance and mis-pricing; it also details how the distribution of wealth creation is related to agency factors and the method of payment. The literature suggests a plethora of variables that might be used as empirical proxies for these five factors. The methodology therefore begins with a preliminary analysis of potential proxies for each of them. This takes the form of a series of univariate regressions using the takeover premium as the dependent variable. The second stage of the empirical analysis seeks to test our hypothesis that each of the five factors outlined on the third row of **Figure 1** is a determinant of the takeover premium. We test this hypothesis by fitting Models A to F (see **Figure 1**) separately. All of the variables used on the preliminary analysis cannot enter Models A to E. This is because some are clearly substitutes. Some variables in the univariate tests represent a characteristic for the target or the bidder while others are simply relative measures of the same characteristic. For example, it makes little sense to include L(TARSIZE), L(BIDSIZE) and BIDSIZE/TARSIZE in the same model. Therefore, the multivariate Model A excludes the first two measures of size while retaining the relative measure. The final stage in the empirical analysis addresses the fundamental objective of the paper, which is to assess if both value creation and its distribution affect the takeover premium. The paper is not designed to develop an overall model explaining cross-sectional

variation in the takeover premium. However, if all variables that should be included in such a model fall into our two categories of wealth creation and distribution, then, provided that we have adequately captured these factors by our proxies, such an overall model will be estimated by our procedure.

## DATA

The empirical analysis considers UK acquisitions that occurred during the period 1 January 1997 to 31 December 1998. Only deals valued in excess of £20 million, where both the acquiring firm and target firm are UK public limited companies, are allowed to enter the sample. *Acquisitions Monthly* reports that there were a total of 120 completed mergers and acquisitions for 1997 and 163 for 1998 falling under the heading 'UK Public M&A'. Of these, 210 were reported as having a value of over £20 million. Takeovers involving foreign firms were excluded. This reduced the sample size to 110. Thirty-five financial firms were excluded from the sample since their accounting data is not comparable with that of industrial firms. Also, three prior years of security price and accounting data were required for both the target and the bidder involved in each takeover. These requirements reduced the sample to 43 takeovers (86 companies) with a combined value of £19.5 billion.

Since the amount of time necessary to effect a takeover will vary cross-sectionally, CARs measured around the announcement of the bid may omit part of the gains and the proportion of the omission will vary cross-sectionally. Also, there is empirical evidence that CARs cumulated over several periods are upwardly biased (Conrad and Kaul, 1993). Therefore, like Slusky and Caves (1991), we use the actual takeover premium as our dependent variable[2]. We use the bid premium as reported in *Acquisitions Monthly* as our measure of the dependent variable. *Acquisitions Monthly* reports four measures of the premium. The premium is computed using prices 30 days and 1 day before the bid announcement. The post-bid price is taken as the price either on announcement or at completion of the bid. The actual premium used in the study is measured as the final bid price divided by the price 30 days before announcement, minus 1. We name this variable PPCOMPt–30. It measures the premium paid, measured at the completion of an acquisition, relative to the share price of the target 30 days prior to the announcement of a bid or the announcement of bid talks, whichever is

the earliest. Three other measures of premia paid are also formed, and are compared to the PPCOMPt–30 variable in a later analysis. The other variables measured are PPCOMPt–1, PPANNt–30 and PPANNt–1, indicating premia paid at both the completion dates and announcement dates, measured on a 30-day and 1-day basis. All four of these premium metrics are significantly positively correlated with each other ($\rho = 0.71$ to $0.97$) and follow very similar distributions (See **Table 2**). Anderson-Darling and Kolmogorov-Smirnov tests fail to reject the null hypothesis of normality for our measure of the takeover premium. The independent variables were collected from Datastream. Details of their computation are found in **Table 1** and their distributions are found in **Table 2**.

## Table 2: Distribution of Dependent and Independent Variables

| Premium/ Independent Variable | Mean | Standard Deviation | Minimum | Median | Maximum |
|---|---|---|---|---|---|
| PPANNt–1 | 0.40 | 0.27 | 0.00 | 0.37 | 1.58 |
| PPANNt–30 | 0.38 | 0.22 | –0.05 | 0.37 | 0.92 |
| PPCOMPt–1 | 0.42 | 0.27 | 0.00 | 0.40 | 1.58 |
| PPCOMPt–30 | 0.40 | 0.23 | –0.05 | 0.38 | 0.96 |
| CAR (–21:+30) | 0.29 | 0.26 | –0.44 | 0.30 | 0.89 |
| | | | | | |
| L(TARSIZE) | 17.962 | 1.333 | 15.030 | 17.925 | 22.597 |
| L(BIDSIZE) | 19.395 | 1.775 | 15.652 | 19.062 | 23.157 |
| TSIZE/BSIZE | 0.47 | 0.68 | 0.02 | 0.23 | 3.63 |
| INDUSTRY | 0.233 | 0.499 | 0.000 | 1.000 | 1.000 |
| ABSBTLEV | 23.33 | 23.9 | 0.06 | 14.53 | 99.73 |
| BIDAVGROCE | 0.231 | 0.147 | –0.250 | 0.220 | 0.490 |
| DIFAVGROCE | 0.16 | 0.957 | –0.540 | 0.010 | 6.180 |
| TARAVGROCE | 0.076 | 0.958 | –5.970 | 0.180 | 0.930 |
| MTBTAR | 2.3 | 1.5 | 0.37 | 1.81 | 7.3 |
| MTBT/MTBB | 0.91 | 0.73 | –0.07 | 0.76 | 3.1 |
| TARQ | 2.1 | 1.36 | 0.47 | 1.56 | 6.9 |
| BIDQ | 2.86 | 2.9 | 0.76 | 1.93 | 15.9 |
| BIDQ/TARQ | 1.67 | 1.5 | 0.29 | 1.2 | 7.1 |
| TAR>3% | 0.366 | 0.191 | 0.000 | 0.340 | 0.770 |
| TARDIR | 0.077 | 0.108 | 0.000 | 0.010 | 0.460 |
| TARCON | 0.443 | 0.202 | 0.026 | 0.411 | 0.867 |
| BIDDIR | 0.041 | 0.077 | 0.00 | 0.010 | 0.330 |
| BID>3% | 0.245 | 0.18 | 0.00 | 0.21 | 0.78 |
| BIDCON | 0.29 | 0.19 | 0.001 | 0.28 | 0.83 |
| ALLCASH | 0.21 | 0.412 | 0.000 | 0.000 | 1.000 |
| SHARES | 0.209 | 0.427 | 0.000 | 0.000 | 1.000 |
| TOEHOLD | 0.581 | 0.082 | 0.000 | 0.000 | 0.290 |

## EMPIRICAL ANALYSIS AND RESULTS

The preliminary empirical analysis involves testing to ascertain whether our empirical proxies designed to measure synergy, prior performance, mis-pricing, agency factors and the method of payment do the jobs they are intended to do. To this end, we estimate univariate regressions for each proxy variable suggested by one of the five factors outlined in **Figure 1**. **Table 3** outlines the results of these regressions grouped by the factors alluded to above. It is likely that all of the univariate models outlined in **Table 3** may have correlated omitted variables. Thus, caution should be exercised in drawing any inferences from them.

Eleven of the potential explanatory variables are significant at the 10 per cent level. These variables represent all of the five factors outlined in **Figure 1** as potential influences on the premium. However, the coefficient for our significant operating synergy variable INDUSTRY has the wrong sign. This can be rationalised as bidders being better informed when it comes to takeovers in their own industry class and procuring more of the gains in such takeovers for themselves. An alternative explanation is the co-insurance of debt hypothesis. This is a case of financial synergy in the sense that firms are prepared to pay more for targets with uncorrelated cash inflows. These uncorrelated cash flows reduce the overall risk of the company and allow greater borrowing since debt will be secured on different cash flow streams. Whatever the explanation for the negative sign on the INDUSTRY variable, there is no evidence that operating synergy contributes to the explanation of the takeover premium. This is consistent with the US evidence of Slusky and Caves (1991).

| Table 3: Determinants of Premia, Univariate Regressions | | | | | | |
|---|---|---|---|---|---|---|
| **Independent Variables** | **Constant** | **Coefficient** | **T-stat** | **P-value** | **$R^2$** | **$R^2$ ADJ** |
| **Synergy (A)** | | | | | | |
| *Operational Synergy* | | | | | | |
| L(TARSIZE) | 1.2583 | −0.0481 | −1.91 | 0.06 | 8.20 | 5.90 |
| L(BIDSIZE) | 0.6786 | −0.0146 | −0.74 | 0.46 | 0.01 | 0.00 |
| BIDSIZE/TARSIZE | −0.0580 | 0.0500 | 1.14 | 0.26 | 3.10 | 0.7 |
| INDUSTRY | 0.4833 | −0.1505 | −2.27 | 0.03 | 11.10 | 9.00 |
| *Financial Synergy* | | | | | | |
| ABSBID-TARLEV | 0.43 | −0.002 | −1.65 | 0.11 | 6.40 | 4.0 |
| **Underperformance (B)** | | | | | | |
| TARAVGROCE | 0.4025 | −0.0877 | −2.58 | 0.01 | 13.90 | 11.80 |
| BIDAVGROCE | 0.3812 | 0.0631 | 0.26 | 0.79 | 0.20 | 0.00 |
| DIFAVGROCE | 0.3820 | 0.0893 | 2.63 | 0.01 | 14.40 | 12.30 |
| TARQ | 0.5 | −0.06 | −2.27 | 0.03 | 11.2 | 9.0 |
| BIDQ | 0.4 | 0.0120 | 1.04 | 0.31 | 2.6 | 0.2 |
| BIDQ/TARQ | 0.28 | 0.07 | 3.50 | 0.001 | 23.0 | 21.2 |
| **Mis-pricing (C)** | | | | | | |
| MTBTAR | 0.49 | −0.04 | −1.96 | 0.057 | 8.6 | 6.3 |
| MTBT/MTBB | 0.43 | −0.04 | −0.77 | 0.44 | 1.4 | 0.0 |
| **Agency Factors (D)** | | | | | | |
| TARDIR | 0.3498 | 0.5941 | 1.91 | 0.06 | 8.20 | 5.90 |
| TAR>3% | 0.3066 | 0.2435 | 1.35 | 0.18 | 4.30 | 2.00 |
| TARCON | 0.22 | 0.39 | 2.38 | 0.02 | 12.10 | 10.0 |
| BID>3% | 0.4431 | −0.1929 | −1.01 | 0.32 | 2.50 | 0.10 |
| BIDDIR | 0.4077 | −0.2896 | −0.64 | 0.53 | 1.00 | 0.00 |
| BIDCON | −0.46 | −0.23 | −1.24 | 0.22 | 3.60 | 1.30 |
| **Method of Payment (E)** | | | | | | |
| TOEHOLD | 0.3836 | 0.3685 | 0.86 | 0.39 | 1.80 | 0.00 |
| ALLCASH | 0.3665 | 0.1402 | 1.70 | 0.10 | 6.60 | 4.30 |
| SHARES | 0.4555 | −0.2565 | −3.57 | 0.001 | 23.70 | 21.90 |

Four of the six variables purporting to measure prior performance are significant. All variables that include some measure of the prior performance of the target are significant. They suggest that the premium is decreasing in the absolute and relative (to the bidder) prior performance of the target. BIDQ/TARQ is the most significant and has the greatest explanatory power. The market-to-book equity of the target is also related to the takeover premium as expected, and is significant at approximately the five per cent level. The negative coefficient is consistent with underpricing of the target provided that this is what is captured by market-to-book equity. This will be discussed further below.

Of our ownership variables, only those pertaining to the ownership of the target are significant at conventional levels. This is not too surprising since the takeovers constitute a larger deal from the point of view of the target. TARCON is the opposite sign to a similar variable reported by Sudarsanam et al. (1996). In our sample it seems that the ownership variables relate more to the bargaining positions in the "deal". In Sudarsanam et al. (1996) they are associated with the pre-bid price performance. This difference in results may be due in part to the different time periods studied. The significance of Sudarsanam et al.'s variables occurs only in the period 1980–85 and not in the second part of the period they studied, 1986–90. Another reason for the difference is that unlike Sudarsanam et al. (1996) we restrict our sample to deals worth at least £20 million. Our sample companies are larger and, on average, have a much bigger portion both in percentage and monetary terms owned by significant outsiders. With the increased shareholder activism of the late 1990s and the much larger concentration of outsider ownership, undervaluation due to lack of monitoring is less likely in our sample. The ownership variables therefore impact on the premium through the bargaining power of the target's shareholders in the deal itself. Two of the three variables designed to capture the method of payment are significant at the 10 per cent level. SHARES is the most significant single explanatory variable and that with the highest $R^2$ in **Table 3**. Its negative coefficient is as predicted and indicates that the bidder pays a smaller premium when it uses its own shares as consideration for the takeover.

| Table 4: Determinants of Takeover Premium, Multivariate Regression Models | | | | | | |
|---|---|---|---|---|---|---|
| **Independent Variables** | **Coeff.** | **T-stat** | **F** | **P-value** | **R²** | **R² ADJ** |
| _Panel A (Models A–E)_ | | | | | | |
| **Synergy (Model A)** | | | | | | |
| INDUSTRY | −0.15 | −2.41 | | | | |
| BIDSIZE/TARSIZE | −0.07 | −1.41 | | | | |
| | | | 3.63 | .035 | 15.4% | 11.1% |
| **Prior Perform. (Model B)** | | | | | | |
| TARAVGROCE | −0.03 | −0.89 | | | | |
| BIDQ/TARQ | 0.06 | 2.36 | | | | |
| | | | 6.5 | .004 | 24.5% | 20.8% |
| **Mis-pricing (Model C)** | | | | | | |
| MTBTAR | −0.04 | −1.96 | 3.84 | .057 | 8.6% | 6.3% |
| **Agency (Model D)** | | | | | | |
| TARCON | 0.48 | 2.95 | | | | |
| BIDCON | −0.30 | −2.10 | | | | |
| | | | 5.25 | .009 | 20.8% | 16.8% |
| **Method of Pay. (Model E)** | | | | | | |
| SHARES | −0.2565 | −3.57 | 12.91 | .001 | 23.7% | 21.9% |
| _Panel B (Models I and II)_ | | | | | | |
| **Value Created (Model I)** | | | | | | |
| INDUSTRY | −0.13 | −2.0 | | | | |
| BIDQ/TARQ | 0.05 | 2.3 | | | | |
| MTBTAR | −0.04 | −2.1 | | | | |
| | | | 6.64 | .001 | 33.8% | 28.7% |
| **Distribution of Value Created (Model II)** | | | | | | |
| TARCON | 0.45 | 3.13 | | | | |
| BIDCON | −0.22 | −1.36 | | | | |
| SHARES | −0.2565 | −3.57 | | | | |
| | | | 8.47 | .0001 | 39.5% | 34.9% |

_See **Figure 1** for definition of models. Though Models C and E are only univariate models they are included for completeness._

Having completed the preliminary analysis above, we now turn to estimating models designed to capture the five factors outlined in the third row of **Figure 1**. The results of the preliminary analysis provide some guidance here, and we develop Models A to E based on the variables that are most likely to successfully represent our five aspects of value creation and distribution. The results of this analysis are reported in Panel A of **Table 4**. Though Models C and E are not multivariate models they are included in the table for completeness.

While the operational synergy model, Model A, is significant at the five per cent level, both variables have the opposite sign to what would be expected if they were proxying for operating synergy. The prior performance model, Model B, comprises both an accounting measure in the average return on capital employed (ROCE) of the target over the three years preceding the takeover and the relative Tobin's q suggested by prior literature (e.g., Servaes, 1991). The latter being a catchall metric subsumes the former. This model is significant at the one per cent level and explains about 20 per cent of the cross-sectional variance of the takeover premium. Model C, which is designed to capture mis-pricing, has market-to-book value of equity as the sole independent variable. Thus, it has already been discussed above and is only included on Panel A of **Table 4** for completeness.

Models D and E purport to capture aspects of the bargaining positions of the shareholders in the target and bidder, that is, factors that will affect the distribution of any value created in the takeover. Model D, which is based on agency considerations, reports that the extent of managerial ownership and concentration in external ownership of both the target and bidder have significant explanatory power for the premium. The signs of the variables are as one would expect if diffuse outside shareholders in the bidder and target were not well represented by their respective managements in the takeover negotiations. The significantly positive sign on TARCON demonstrates that as the concentration of the target's shareholders increases the premium obtained increases. Similarly, a closer alignment of the interest of the bidder's management and shareholders implies a lower premium. Model E has SHARES as its sole explanatory variable and is included in Panel A just for completeness.

Panel B of **Table 4** outlines the results for Models I and II. These models are designed to reflect the value creation and value distribution aspects of the takeover respectively. Model I is an amalgamation of

Models A, B and C from Panel A. In this model we find that all three variables are significant at the five per cent level. However, the sign on the INDUSTRY variable remains inconsistent with its capturing any aspect of synergy. Models D and E are combined to form Model II. Panel B of **Table 4** reports that BIDCON is no longer significant in this model. The model has two significant bargaining position or "deal" variables. The positive coefficient on TARCON represents the influence of the target's shareholders on the deal. The bidder is represented through SHARES, this being a method of payment that the bidder will use to mitigate the risk of overvaluation of the target if it is in a position to do so.

## Table 5: Model Based on Both Value Creation and Distribution

#### Panel A: Dependent Variable Target Premium

| INDUSTRY | BIDQ/ TARQ | MTBTAR | TARCON | BIDCON | SHARES | $R^2$ (adj $R^2$) | F |
|---|---|---|---|---|---|---|---|
| −0.04 | 0.05*** | −0.04** | 0.28** | −0.14 | −0.26*** | 63.9% | 10.6*** |
| (−0.82) | (3.15) | (−2.6) | (2.25) | (−1.0) | (−4.6) | (57.9%) | |

#### Panel B: Dependent Variable CAR from 30 before, through 21 days after, announcement

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| −0.025 | 0.09*** | −0.03 | 0.40*** | −0.24 | −0.19*** | 61.7% | 9.4*** |
| (−0.4) | (4.1) | (−1.5) | (2.77) | (−1.5) | (−2.76) | (55.2%) | |

*** *Significant at the one per cent level*
** *Significant at the five per cent level*

Since the focus of the paper is to establish if both value creation and distribution impact on the takeover premium, we need to establish if each of Models I and II have incremental explanatory power over the other. Therefore, we estimate one final model, which is merely a combination of Models I and II. The results of estimating this combined model are reported in **Table 5**. This model has four significant explanatory variables: BIDQ/TARQ; MTBTAR; TARCON and SHARES. Furthermore, the model explains about two-thirds of the cross-sectional variance in the takeover premium.

We also estimate a variation of the combined model reported in Panel A of **Table 5** using CARs as the dependent variable. The prices on which these CARs are based are collected from Datastream and their distribution is outlined in **Table 1**. CARs are computed for each target

over the period from 30 days before through to 21 days after the announcement date of the bid. These CARs are based on the market model. The $\alpha$ and $\beta$ parameters for the market model are estimated, over a 120-day period ending 31 days prior to the announcement of the takeover, by regressing the return on each share on the FTAllshare Index. Panel B of **Table 5** reports that our results are more or less unaffected by using event-period CARs instead of the premium.

The relative measure of Tobin's q BIDQ/TARQ is highly significant in both models presented in **Table 5**. This suggests that the relative performance of bidders and targets is an important explanatory factor for takeover premia. It also provides some evidence that the takeover market can be characterised as a market for corporate control where management teams that do create wealth replace those that do not. This interpretation is reinforced by the inclusion of MTBTAR. The latter variable should control for possible (mis)-pricing effects included in BIDQ/TARQ. MTBTAR itself is significant in explaining the takeover premium. However, it does not contribute to the explanation of cross-sectional variation in targets' CARs. It is difficult to envisage mis-pricing of the target's shares explaining some of the cross-sectional variation in the takeover premium but not explaining abnormal returns to the shares around the announcement of the merger. In addition, differential MTBTAR can also reflect different growth prospects and accounting conservatism across companies. Thus, we are sceptical that mis-pricing of the target can be proffered as an explanation for wealth creation in takeovers.

TARCON is significantly positive in both models outlined in **Table 5**. This can be interpreted as closer alignment of management's and shareholder's interests in the target leading to a higher takeover premium. SHARES is the second variable representing the relative bargaining strength of the bidder and target in the takeover negotiations. It appears that if shares are used as consideration for the deal the premium paid is reduced. We have argued above that shares are used when the bidder perceives risk and is in a position to share this risk with the target's shareholders. Since both risk and the ability of the bidder to choose its method of consideration should lead to a reduced premium, the sign of the variable is as predicted.

The most important feature of the results presented in **Table 5** is that the models' significant variables are drawn from both the value creation and value distribution sides of **Figure 1**. Thus, we can conclude that the

takeover premium is influenced by both the amount of value created in a takeover and the capacity of the target shareholders to procure a generous portion of the gain for themselves.


## CONCLUSIONS

We provide clear evidence that the prior performance of the target company, and particularly its performance relative to that of the bidder, explains about 20 per cent of the premium variance. This supports the characterisation of takeover activity in the UK as a market for corporate control. It also demonstrates that takeovers are potentially wealth enhancing. This is important since failure to find that any of our proxies for wealth creation explained the takeover premium would lead us to doubt that takeovers do anything more than redistribute wealth from bidder shareholders toward investment bankers and target shareholders.

We fail to provide any evidence that the cross-sectional variance in the takeover premium is related to operating synergy. This may be due in part to the difficulty of measuring operating synergy. However, it is consistent with the US evidence of Slusky and Caves (1991). The lack of empirical evidence supporting one the main motives advanced by textbooks for acquisitions and mergers is noteworthy. Thus, one of our main conclusions is that the source of any takeover gains in the UK is more likely to stem from the market for corporate control operating to discipline inefficient management than from synergy.

Perhaps not surprisingly in a takeover market where evidence of overall gains has proved elusive, a larger portion of the variance in the takeover premium is explained by variables proxying for the relative bargaining strengths of the bidder and target. The finding that the premium is increasing in the concentration of the ownership of the target is interpreted as evidence that a stronger bargaining position for the target's shareholders will procure a greater premium. The negative relation between the premium and the propensity to pay for the takeover solely in shares is indicative of the bidder reducing the premium and at the same time reducing its risk when it has sufficient bargaining power to do so. The incremental significance in explaining the premium of the target's market-to-book value of equity over the relative Tobin's q measures might be evidence of mis-pricing by the market. However, we would be sceptical of such an explanation. We note that market-to-book is no longer significant when we change the dependent variable to the

CAR to the target around the takeover announcement. Furthermore, only part of the market-to-book equity ratio is related to mis-pricing and it is difficult to decompose it into a part associated with mis-pricing and a part associated with underperformance.

Finally, we consider some avenues for future research. Takeovers and mergers often have unique characteristics that may not be appreciated when analysing a sample drawn from a wide range of such activity. Therefore, other potentially profitable avenues for future investigation include studies of the determinants of the takeover premium for different subsets of firms. For example, takeovers that are wealth increasing and those that are not could be studied separately. Takeovers involving financial firms, industrial firms and high-tech firms, as well as those that involve international bidders or targets, may also be worthy of distinct investigation.

## ACKNOWLEDGEMENT

## NOTES

[1]  Evidence of the inefficient management hypothesis is provided by Agrawal and Jaffe (1999).
[2]  Slusky and Caves adjust the premium for the movement in the market index.

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