

## Cash Bid Premiums Behavior across U.K Industry and Over Time

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### Abstract

*An important aspect of mergers and acquisitions is the size of bid premiums offered by acquiring to acquired companies. The statistical mean of cash bid premiums offered by U.K acquiring to acquired companies during 1987 to June 1991 is 18 percent. Nonetheless, the premiums behaviour shows slightly different pictures across industries and over time.*

*We employed the one-way Analysis of Variance (ANOVA) to compare some groups of bid premiums in mergers and acquisitions of U.K public companies. Findings indicate that there are significant differences between premiums across some industries and over time, which suggests that managers should consider these differences when making strategic decisions or when bidding for target companies.*

**Keywords:** Cash, Bid, Premiums, Mergers, Acquisitions, Financial market, Sectors, Significance, Six-month, U.K.

### ملخص

إن أحد أهم خصائص اندماج واستحواذ الشركات هو حجم العالوات المعروضة من طرف الشركات القابضة على الشركات التابعة. فالمتوسط الحسابي للعالوات النقدية المعروضة من قبل الشركات البريطانية القابضة على الشركات التابعة خلال 1987 حتى جوان 1991 هو 18 بالمائة. رغم ذلك، فإن سلوك العالوات فيما بين القطاعات الاقتصادية وعبر الزمن يبين صورا مختلفة قليلا.

لقد استخدمنا تحليل التباين ذو اتجاه واحد لمقارنة بعض الفئات من العالوات المعروضة من قبل الشركات البريطانية القابضة على الشركات التابعة. تشير النتائج الى وجود تباينات ذات دلالة إحصائية مهمة بين العالوات في بعض القطاعات الاقتصادية وعبر الزمن، مما يدل على ضرورة أخذ تلك الفروقات في الحسبان عند صناعة القرارات الاستراتيجية من قبل المدراء وخاصة عند تقديم عروضهم للاستحواذ على شركات مستهدفة.

**الكلمات المفتاحية:** نقدي، عرض، عالوات، الاندماج، الاستحواذ، سوق مالي، قطاعات، دلالة، نصف سنوي، بريطانيا.

## 1. Introduction

### 1.1 Preamble

Merger is a joining of forces of two or more companies and acquisition is a purchase of a company by another, whether it is welcome or hostile.

Mergers and Acquisitions (M&A) activity has been around since the end of the nineteenth century. Each company has individual goals that it hopes to achieve from M&A. Examples of common goals are financial synergy for lower cost of capital, improving company's performance, economies of scale, increasing market share and diversification of risk.

One important aspect of mergers and acquisitions activity is the size of premiums offered by acquiring to acquired companies. Premium is the difference between a bid price and an acquired company's share price in a certain point of time. In M&A markets, acquiring companies usually offer acquired companies' shareholders more than their market capitalization. For instance, in the USA, premiums during 1974-1985 period were approximately double those of 1963-1973. The mean cash bid premiums rose from 29 percent to 70 percent, and the mean share bid premium rose from 32 percent to 67 percent.<sup>1</sup>

Concerning the period of this study (1987 to June 1991), the statistical mean of cash bid premiums in the U.K is 18 percent. Nevertheless, the

<sup>1</sup> Nathan, K.S. and O'Keefe, T.B. **The Rise in Takeover Premiums. An Explanatory Study**, Journal of Financial Economics, Vol. 23, no. 1, 1989, p. 101.

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premiums behaviour when we divided that period into nine groups of six months indicates slightly different figures. This is the case with respect to the premiums behaviour in twelve groups of economic sectors, sixteen groups of six-monthly crossed by the twelve economic sectors and four groups of financial markets. The study is limited to cash bid premiums because cash is the leading method of payment in mergers and acquisitions.

### 1.2 Problematic

The thrust of this research is to increase understanding of cash bid premiums behaviour by studying the statistical significance of the differences between some groups of cash bid premiums of U.K public companies. The question, therefore, is: are there significant differences between some groups of cash bid premiums across British industries (sectors) and over time?

### 1.3 Hypotheses

- a. Alternative hypothesis: There are significant differences between some groups of cash bid premiums across the British industry and over time.
- b. Null hypothesis: There are not differences between some groups of cash bid premiums across the British industry and over time.

### 1.4 Study importance

An answer to the above question should help managers to make strategic decision and particularly to bid for target companies. Moreover, researchers will have certain specified periods and economic sectors for further investigations.

## 2. Literature review

Researchers have been studying various aspects of mergers and acquisitions and, perhaps, an important aspect of these is the impact of M&A on the wealth of shareholders. Mulherin et.al. (2017), for instance, gave

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evidence on mergers and acquisitions through a historical and modern report. The authors reviewed more than 120 M&A related-articles published in well-known finance journals since 2011. Finding in the early M&A literature suggests that, on average, M&A activity creates wealth.<sup>2</sup>

Other researchers sought to find determinants of premiums in M&A transactions. They used samples of transactions that covers various industries. Choi and Russell (2004), for example, concentrated on economic gains around M&A in the construction industry of the United States of America. Findings, drawn from an analysis of 171 construction M&A deals, indicate that the performance of construction M&A was positive at an insignificant level, as calculated by equity market returns.<sup>3</sup>

Hagendorff et.al. (2012) studied reflections of premiums paid for bank M&A in the European Union between 1997 and 2007. The results suggest that bidding banks value profitable, high-growth and low risks targets.<sup>4</sup>

Alexandridis et.al. (2013), examined the deal size, acquisition premiums and shareholders gains. The findings suggest a robust negative relation between premiums and target size, which indicates that acquirers tend to pay less for large firms. Yet, these transactions still spoil more value for acquirers around deal announcements.<sup>5</sup>

Qiu et.al. (2014) studied a sample of concluded M&A transactions between 1994 and 2010 in which both participants are public US firms appended with data for target CEO retention. The author discovered that target

<sup>2</sup> Mulherin, J.H., Netter, J.M and Poulsen, A.B. **The Evidence on Mergers and Acquisitions: A Historical and Modern Report**, in the Handbook of the Economics of Corporate Governance, edited by Benjamin E. Hermalin and Michael S. Weisbach, North Holland, Vol. 1, 2017, p. 235.

<sup>3</sup> Choi, J. and Russell, J.S. **Economic Gains Around Mergers and Acquisitions in the Construction Industry of the United States**, Canadian Journal of Civil Engineering, Vol.31, No.3, 2004, p.513.

<sup>4</sup> Hagendorff, J., Hernando, I., Nieto, M.J. and Wall, L.D. **What do Premiums Paid for Bank M&As Reflect? The Case of the European Union**, Journal of Banking & Finance, Vol. 36, 2012, p. 749.

<sup>5</sup> Alexandridis, A., Fuller, K.P., Terhaar, L., and Travlos, N.G. **Deal Size, Acquisition Premia and Shareholder Gains**, Journal of Corporate Finance, Vol. 20, 2013, p. 1.

CEOs trade shareholder wealth for private benefits during corporate takeovers.<sup>6</sup>

Levi et.al. (2014), found that companies managed by female directors are less likely to bid and if they do, pay lower premiums. The findings support the view that female directors help create shareholder wealth through their role on acquisition decisions.<sup>7</sup>

Given that, very few researchers examined bid premiums between industries and/or periods. A rare example, perhaps, is that of Madura et al. (2012) who studied the variation in takeover premiums between industries and over time (a similar topic to the one in question). The authors documented significant variation in the quarterly premiums paid for acquired companies between industries for a certain quarter. The findings indicate that premiums are higher for industries that experience higher growth, are highly concentrated, have more research and development and have less dispersion in performance between companies within the industry. The premiums are lower after deregulatory events in the natural gas and banking industries. Industry premiums are also positively correlated with capital liquidity and with the volatility of GDP growth. However, when focusing only on cash-financed mergers, the correlations between some industry variables and premiums are no longer important.<sup>8</sup>

### 3. Data Characteristics

#### 3.1 Source of Data

We referred to the “Acquisitions Monthly”, The “DataStream Company” and the “Financial Times” to gather data on mergers and acquisitions of U.K public quoted companies during four and half years starting from January 1987.

<sup>6</sup> Qiu, B., Trapkov, S. and Yakoub, F. **Do Target CEOs Trade Premiums for Personal Benefits**, Journal of Banking & Finance, Vol. 42, 2014, p. 23.

<sup>7</sup> Levi, M., Li, K. and Zhang, F. **Director Gender and Mergers and Acquisitions**, Journal of Corporate Finance, Vol. 28, issue C, 2014, p. 185.

<sup>8</sup> Madura, J., Ngo, T. and Viale, A.M. **Why Do Merger Premiums Vary Across Industry and**

### 3.2 Distribution of Bids

#### 3.2.1 *Distribution of Bids over the Period of Study*

Appendix.1 shows that the data consists of 723 bids occurred during four years and half starting from January 1987. The Table shows that the highest number of bids, 25, occurred during the month of July 1987 and 1988, 64 during the fourth quarter of 1988, 117 during the second half of 1988 and 197 bids during 1987. On the contrary, only 2 bids occurred in June 1989, 18 in the first quarter of 1991, 42 in the second half of 1990 and 117 bids in 1990. We observe that the U.K mergers and acquisitions market has experienced a continuous negative trend during the period of study. Compared with 1987, there was nearly 1.52%, 20.81% and 40.60% decrease in the number of mergers in 1988, 1989 and 1990, respectively. The Table also shows that out of 723 bids occurred during the period of study, 8 cases are considered as missing due to the lack of their announcement dates.

#### 3.2.2 *Distribution of Bids by Economic Sectors*

Appendix.2 shows the number of bids occurred in the main economic sectors according to the U.K Standard Industrial Classification Code. The Table indicates that most bids, 208 and 130, occurred in the Consumer Services and Consumer Goods Sectors. Whereas, only 3 bids occurred in the Energy Sector specialized in coal extraction and manufacture of solid fuels.

#### 3.2.3 *Distribution of Bids by Methods of Payment*

Bidding companies offered fifty-two different methods of payment to target companies during the period of study, which include cash, ordinary shares, preference shares, partial preference shares, loan notes, convertible loan notes and all possible mixtures of them. Appendix.3 shows the main methods of payment used for paying bids. On the Table, 626 bids out of 723 are paid only by 6 different methods of payment. Notably, payment by cash alone

accounts for nearly 31% of all different methods of payment. The second most frequent method of payment is cash or shares, which accounts for 17.15%. Cash or shares & cash represent 2.62%. We can see that the ability to underwrite share has been dramatically low as compared to cash because, it might be that share offers create some reinvestment problems to institutions or the bidding firm's shareholders face a partial dilution of existing voting rights, or cash offers have a bargaining power on the outcome of a bid.

The study is limited to cash bid premiums since cash is the predominant method of payment in mergers and acquisitions, and shareholders are unwilling to accept the exchange of shares of any but the most notorious companies (see Appendix. 3). Moreover, Weston et.al. (1990) found that cash payments increase bid premiums.<sup>9</sup>

#### 3.2.4 Distribution of Bids by Financial Markets

There are 722 bids for target companies traded in 5 different financial markets. Appendix.4 shows the number of bids for targets in each market. The Table indicates that the highest numbers, 587 and 108, of target companies are traded in the London Stock Exchange and the Unlisted Securities Markets, respectively but only 6 companies are traded in the Third Market.

## 4. Descriptive Statistics and Significance Tests

Having looked at the sources of data and the distribution of bids, we shall do a statistical description and some significance tests to the variable, bid premiums. We measure the variable as follows:

$$BPPCM1M = ((PRICEC / TPRM1M) - 1) * 100$$

Where:

**BPPCM1M:** cash bid premiums one month before the announcement date of a

<sup>9</sup> Weston, J.F., Chung, K.S. and Hoag, S.E. **Mergers, Restructuring and Corporate Control**, Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 1990.

bid.

**PRICEC:** cash bid price offered by the bidder to the target at the announcement date of a bid.

**TPRM1M:** target's ordinary share price one month before the announcement date of a bid.

#### 4.1 Whole Period Premiums Description

Appendix.5 shows premiums during the period of study. We have depicted histograms and checked the standard deviations together with the means to detect outliers. If the size of premiums is greater than 95%, it clearly affects the shape of histogram(s), enlarges the standard deviation(s) and consequently it is an outlier. Altogether, we discovered eleven observations as outliers, which might have randomly occurred, since outliers do not indicate any particular pattern. In that, out of 11 outliers 3 cases are attached to the Construction Sector, 6 to bids paid by cash, 3 to London Stock Exchange, 4 are attached to both agreed and hostile bids, 7 to successful bids, 2 to the year 1987, 3 to 1988, 1 to 1989, 3 to 1990 and 2 to the first half of 1991. Thus, the valid observations primarily subject to the significance tests after discarding outlying observations are 560. The Table shows that the mean, 18, is enough to encourage target's shareholders to accept the offer. The Table also shows 13 offers discarded in this study due to the different methods of payment used rather than cash.

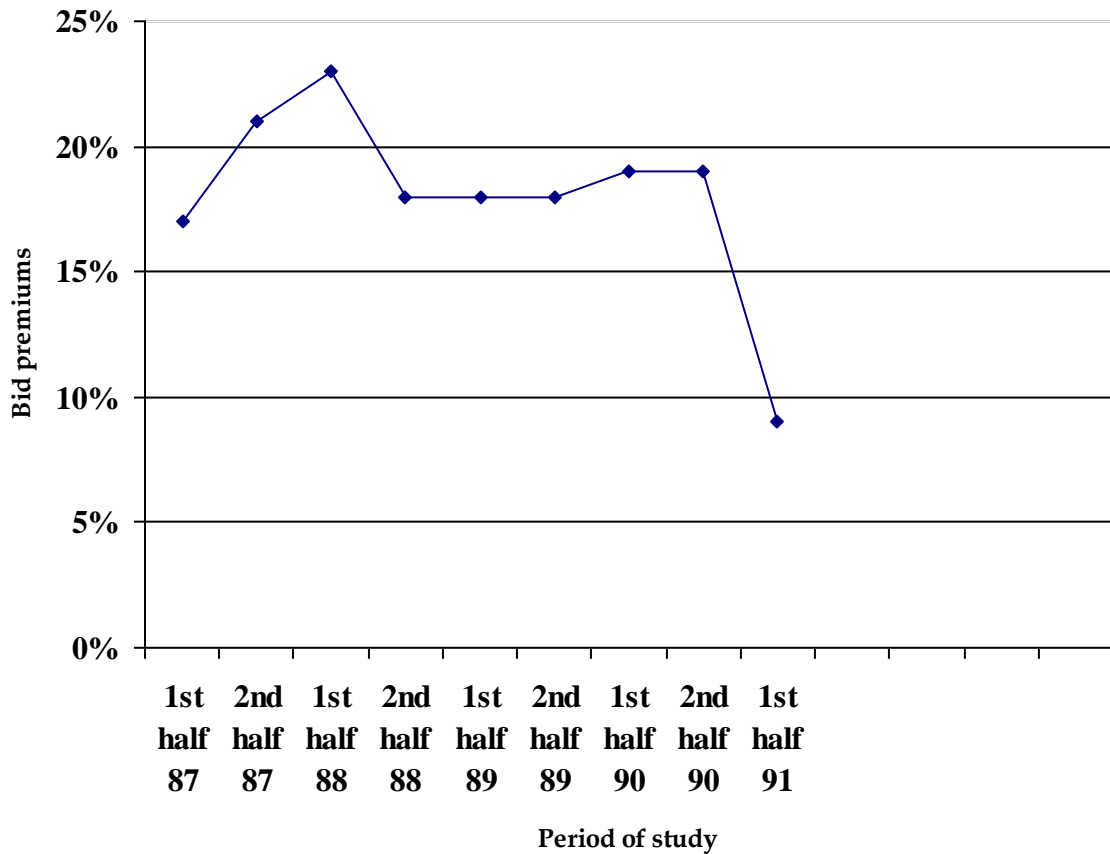
#### 4.2 Six-monthly Premiums Description

Appendix. 6 (a and b) shows the premiums behaviour in each six month during the period of study, and graph.1 summarises it. The trend of premiums means went upwards for three successive semesters, then got downwards and kept nearly the same level for five successive semesters and suddenly plunged to the lowest level in the last semester 1991. The drop is due perhaps to market conditions such as the availability of business assets coupled with the high cost of funds and the lack of confidence on the part of bidding firms caused by the



recession, which started to bite.

**Figure no. (1): Half-yearly bid premiums means (1987-1st half 1991)**



#### 4.3 Significance Tests

The aim of significance tests is to find possible significant differences between the following groups of bid premiums means:

1. 9 groups of six-monthly
2. 12 groups of economic sectors
3. 16 groups of six-monthly crossed by the 12 economic sectors attached to valid cases greater than or equal 10
4. 3 groups of financial markets

**Note:** a two-tail test of significance is more appropriate than one-tail because, theoretically we cannot argue that premiums mean in any group should be higher than the mean of another group.

To do the above tests, we employed the one-way Analysis of Variance (ANOVA). The technique assumes that populations have the same variance (homogeneity of variance) and the sample (groups) drawn from normally distributed populations. Nonetheless, Iversen and Norpoth (1976) prove that these assumptions sometimes can be moderately violated without the results losing their theoretical justification.<sup>10</sup>

One appropriate test when the sizes of groups are unequal is the Bartlett-Box-F for homogeneity of variance (Norusis, 1983).<sup>11</sup> The test takes into account all groups together. Results indicate that the observed significance levels (P) are, except for those of six-monthly groups, not supporting the homogeneity of variance assumption (see Appendix 11). We employed The Kolmogorov-Smirnov test to check for the assumption of normality of the population. The test compares the cumulative distribution function for a variable with a specified distribution (Norusis, 1983) and (Neave and Worthington, 1988).<sup>12</sup> The test is applicable on small samples, and in this study, we will apply it on each group. Results indicate that generally the null hypothesis that the groups are drawn from a normally distributed population cannot be rejected at 5% and 1% levels of significance. This is because the reported 2-tailed P (significance level of Z) is generally greater than or equal 0.05 and 0.01, respectively, (see Appendix 10). Notably, when we tested the six-monthly premiums by sectors, all null hypotheses are accepted except the one related to group 12 (Consumer Services Sector by the second half of 1988).

#### 4.4 Six Monthly Premiums Significance Tests

Results from applying one-way ANOVA on the 9 groups of six-monthly

<sup>10</sup> Iversen, G.R and Norpoth, H. **Analysis of Variance**, Beverly Hills, Calif, Sage Publications. 1976.

<sup>11</sup> Norusis, M.J. **SPSS-X Introductory Statistics Guide**, McGraw-Hill, New York. 1983.

premiums show that there are insignificant differences between their means except between group no.3 (premiums in the first half of 1988) and no.9 (premiums in the first half of 1991) at 5% level of significance. This means that the difference between the two groups is certainly not due to chance. The F-ratio, 0.8633, is near to 1 to accept the null hypothesis that, there are not significant differences between the groups means, for all groups together. The significance level, 0.5474, is the probability of obtaining an F-statistic at least as large as the one calculated when all groups' means are equal. This level of significance is high enough to accept the null hypothesis too. The significant difference between premiums means in the first half of 1988 and premiums means in the first half of the year 1991 highlights the importance of considering time or economic cycles when studying the premiums behaviour. Since the first half of 1988 is associated with the highest, 23%, premiums mean and 59 valid observations, compared to 18% during the whole period of study, further investigations will be important. (See Appendix 12).

#### 4.5 Economic Sectors Premiums Description and Significance Tests

Appendix .7 (a and b) describes bid premiums in twelve economic sectors. Results from applying one-way ANOVA on the 12 groups of economic sectors' premiums means indicate that the alternative hypothesis that, there are differences between these groups is accepted at 5% level of significance (The F-ratio = 2.6111 and the level of significance is 0.0030). The difference is particularly between groups: 3 and 12 (Industrial Goods Sector and Diplomatic Representation, International Organizations and Allied Armed Forces Sector), 3 and 11 (Industrial Goods Sector and Consumer Services Sector) and between 9 and 11 (Transport and Communication Sector and Consumer Services Sector), (see Appendix. 12). These sectors therefore can be subject to profound studies. Apparently, in terms of the size of premiums, both the Industrial Goods and the Transport and Communication Sectors are not good bets for bidding firms. However, in other terms the Industrial Goods Sector might not be so.

<sup>12</sup> Neave, H.R. and Worthington, P.L. **Distribution-Free Tests**, Unwin Hyman, London. 1988.

In this context, Peterson (1990) carried out a survey which indicate that 100 percent of industrial goods firms prepared sales forecasts more often on the basis of experts opinions as primary estimates and financial managers reviewed sales forecasts more often in these firms (compared with marketing or sales managers and professional forecasters in the Consumer Goods Sector). Moreover, the Industrial Goods Sector respondents (experts) reported more forecasting accuracy.<sup>13</sup> This so-called marketing advantage (synergy) could be one reason that drives the payment of higher premiums for target firms working in the Industrial Goods Sector. Another reason might be the so-called market structure advantages hypothesis. Under this hypothesis, we expect a bidding firm to offer premiums in relation to the extent to which a target firm's size generates merger benefits. Merger benefits should be higher if the control of a target firm working in the Industrial Goods Sector increases the market share of the bidding company, other things being constant.

#### 4.6 Economic Sectors Premiums by Six-monthly Premiums Description and Significance Tests

When premiums without outliers in the economic sectors are crossed by six-monthly premiums, the number of valid observations is sometimes very low. Therefore, a descriptive summary table of 16 groups of premiums means associated with 10 valid cases or more is selected (see Appendix. 8). The Table shows that groups 3, 5, 6, 8, 10, 11, 14 and 15 are attached to premiums means greater than the mean, 18%, of the whole period of study. Thus, any of these groups should have more attention. However, the small numbers of valid observations has put restrictions on some of these groups. For a better comparison between the 16 groups' premiums means, we employed the one-way ANOVA test (see Appendix. 12). Results of the test show that the F-value is equal to 1.967, which is significant at 0.0178. The F-value is far from 1 and the level of significance is very small. Therefore, we reject the null hypothesis that

<sup>13</sup> Peterson, R. **The Role of Experts' Judgment in Sales Forecasting**, Journal of Business Forecasting, Vol. 9, Summer, 1990, p. 16.

there are not significant differences between the 16 groups' premiums means at 5% level. Precisely, there are significant differences at 5% level between groups: 4 and 8, 12 and 8, 16 and 8, 13 and 8, 9 and 8, 4 and 5, 12 and 5, 4 and 14 and 12 and 14. Further analysis is needed on these groups.

#### 4.7 Financial Markets Premiums Description and Significance Tests

Appendix. 9 shows premiums statistics within the different financial markets. It shows that the premiums means, 18%, in LSE and USM Financial Markets are also equal to the premiums mean during the whole period of study. The highest mean, 25%, is offered to Foreign Companies and it is associated with 2 observations. The Table also indicates 4 groups (Financial Markets): the LSE, USM, TM and FC. The last group is discarded from the test of significance because it is associated with only 2 valid cases, which do not meet the condition of using Bartlett test for homogeneity of variance. Results of one-way ANOVA ascertain that there are insignificant differences at 5% level between any two groups of premiums means (the F-value = 0.0023 and its level of significance = 0.9977). That is, the premiums means attached to the LSE, USM and TM Financial Markets are very close, and these markets are not important when studying or interpreting the premiums behaviour, (see Appendix. 12).

Altogether, three groups of premiums means are significantly different from the remaining groups in question: the first half of 1988, the Industrial Goods Sector and the Consumer Service Sector crossed by the second half of 1989.

### 5. Interpretation of significant groups of bid premiums

**5.1 First: HALF3 Group (1<sup>st</sup> January 1988 to 30 June 1988):** the statistical tests suggest that bid premiums in this group is significantly different from the remaining, 8, groups of six-month periods. It is well documented that the eighties period was characterized by economic growth in the U.K. Particularly, between 1985 - 1988, U.K economic growth was well above the long run trade

rate of 2.5%. The late 1980s were a period of rapid economic expansion, (Pettinger, 2016).<sup>14</sup> In the same context, Carbonara and Caiazza (2009) found that the increase in global M&A in Italy in 2005 was driven by certain factors; of which and the most significant at the macroeconomic level has been continued economic growth.<sup>15</sup>

**5.2 Second: SECTOR3 Group (Industrial Goods Sector):** Findings suggest that bid premiums in this sector are significantly different from premiums in the remaining, 11 groups, of economic sectors. The Industrial Sector covers companies that manufacture and distribute capital goods in support of industries such as aerospace and defense, construction and engineering, and electrical equipment and heavy machinery.

The Industrial Goods Sector goes through life cycles. With the industry covering many subsectors, there is normally at least one area of growth in it even when the economy shrinks. Investors, including bidding companies, do well paying attention to the industry trends and position of the growth cycle. Companies in the accelerating growth and decelerating decline phases have the best performance and are given higher estimations due to their upcoming growth.

Throughout the Eighties, the quality of the manufacturing base improved greatly: factories and industrial relations were overhauled. Nevertheless, the industrial base did not grow: managers bought companies (not equipment) by means of mergers, acquisitions and takeovers. Schoenberga and Reevesb (1999) observed that the current takeover wave is concentrated on certain industry sectors. Their empirical research shows that exposure to <sup>16</sup>deregulation is in fact the most important single discriminator

<sup>14</sup> Pettinger, T. **The Lawson Boom of the Late 1980s**, Economics Help, January 2016, available at: <http://econ.economicshelp.org/2008/01/lawson-boom-of-late-1980s.htm>

<sup>15</sup> Carbonara, G. and Caiazza, R. **Mergers and Acquisitions: Causes and Effects**, The Journal of American Academy of Business, Cambridge, Vol. 14, No. 2, 2009, p. 188.

<sup>16</sup> Schoenberga, R. and Reevesb, R. **What Determines Acquisition Activity Within an Industry?**, European Management Journal, Vol. 17, Issue 1, 1999, p. 93.

between industries with high and low acquisition activity. Industry concentration and industry growth rate are also maintained as determinants of the takeover rate within an industry.

**5.3 Third: SCT9SD89 Group (the Consumer Service Sector crossed by the second half of the year 1989):** bid premiums in the second half of the year 1989 can be interpreted in the same way as the first half of the year 1988 above. This is because the two periods are close and, thus, there was not a particular economic or financial phenomenon reported in one of these periods without the other. With regard to the Consumer Service Sector, it is the variety of services delivered to consumers of a product by the firm, which produces, markets, or backs the product. The services may include technical support, warranty registration, problem reports, etc... It is perhaps enough to mention the study by Higson (1998) which describes the accounting goodwill in U.K turnovers between 1976 and 1992. The results indicate very high growth of goodwill in the eighties, which was the outcome of the economy-wide rise in the valuation ratio. The author concludes that though there was an increase in the Service Sector takeovers, the levels of goodwill found in manufacturing takeovers were at least as high and share price returns to acquirers over the bid announcement period indicate extensive overpayment (premiums) for goodwill.<sup>17</sup>

## 6. Summary

This study describes and analyses the behaviour of cash bid premiums in mergers and acquisitions of U.K public companies during the years 1987 to the end of the first half of 1991.

First, we described the data. Namely, the distribution of bids has been tabled monthly, quarterly, half-yearly and yearly during the period of study. The number of bids topped during the year 1987. Bids have been distributed by twelve economic sectors involved in mergers, methods of payment and by financial markets. Most bids occurred in the Consumer Services Sector, paid by cash and most targets were traded in the London Stock Exchange.

Second, we have done some statistical descriptions and tests on some groups of cash bid premiums means. We used the one-way ANOVA procedure to compare premiums means of nine groups of six-month, twelve sectors, sixteen groups of six-month crossed by sectors, and three financial markets. Since the use of one-way ANOVA is based on some assumptions, we employed some tests to check for these: the Bartlett-Box-F to check for homogeneity of variance and the Kolmogorov-Smirnov test to check for population normality. Result of the test ascertains that the distribution of the population is normal. Results of one-way ANOVA indicate that, except the financial markets, there are significant differences between one pair of six-month premiums means, three pairs of sectors and nine pairs of six-month by sectors.

Finally, the study interprets the significance of bid premiums occurred in the U.K main economic sectors and over time. Yet, premiums behaviour is still in need of more and thorough investigations. Precisely, why managers of bidding companies in the first half of 1988 were more generous as compared to others? Why target managers and shareholders in the Industrial Goods Sector and managers in the second half of 1989 who were working for the Consumer Service Sector made better deals as compared to others? Perhaps, what characteristics discriminate these economic sectors and periods? Answers to these questions should improve the making of corporate strategic decisions.

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<sup>17</sup> Higson, C. **Goodwill**, British Accounting Review, Vol. 30, 1998, p. 141.



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### Appendices

**Appendix. 1: Distribution of bids over the period of study**

Period	Period of study					Total
	1987	1988	1989	1990	1 <sup>st</sup> half 1991	
	Count	Count	Count	Count	Count	
January	14	15	13	19	8	69
February	19	14	17	13	4	67
March	22	9	16	17	6	70
April	23	13	11	10	10	67
May	12	12	15	3	12	54
June	18	14	2	13	11	58
July	25	25	13	7	-	70
August	8	13	12	6	-	39
September	23	15	15	8	-	61
October	10	21	8	9	-	48
November	7	24	17	7	-	55
December	16	19	17	5	-	57
<b>Total</b>	197	194	156	117	51	715
1st quarter	55	38	46	49	18	206
2nd quarter	53	39	28	26	33	179
3rd quarter	56	53	40	21	-	170
4th quarter	33	64	42	21	-	160
<b>Total</b>	197	194	156	117	51	715
1st half	108	77	74	75	51	385
2nd half	89	117	82	42	-	330
<b>Total</b>	197	194	156	117	51	715
<b>Yearly total</b>	197	194	156	117	51	715
<b>Missing</b>						08

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<b>cases</b>						
<b>Total</b>						723

**Appendix. 2: Bids by economic sectors**

<b>Names of sectors</b>	<b>Number of bids</b>
1. Energy (coal extraction and manufacture of solid fuels).	3
2. Energy (extraction and preparation of metallic ores).	40
3. Industrial goods	41
4A. Consumer goods (others)	130
4B. Footwear and clothing industries	7
5A. Construction (others)	64
5B. Building completion work	63
6. Wholesaling, retailing and consumer services.	19
7. Transport and communication.	93
8. Financial and professional services.	9
9. Consumer services.	208
10. Diplomatic rep., International Org., allied armed forces.	28
<b>Total targets' sectors</b>	<b>705</b>
<b>Missing target' sectors</b>	<b>18</b>
<b>Total bids during the study period</b>	<b>723</b>

**Appendix. 3: Bids by main methods of payment**

<b>Methods of payment</b>	<b>Number of bids</b>
1. Cash only	224
2. Cash or shares	124
3. Cash or loan notes	122
4. Shares only	116
5. Cash & shares	21
6. Cash or shares & cash	19
<b>Total of main methods of payment</b>	<b>626</b>
<b>Total of other methods</b>	<b>97</b>
<b>Total</b>	<b>723</b>

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**Appendix. 4: Bids by financial markets**

Financial markets	Number of bids
1.London Stock Exchange (LSE)	587
2.Unlisted Securities Market (USM)	108
3.Over-The Counter Share Market (OTC)	17
4.Third Market (TM)	6
5.Foreign Company (FC)	4
<b>Total available targets financial markets</b>	<b>722</b>
<b>Missing target financial markets</b>	<b>1</b>
<b>Total</b>	<b>723</b>

**Appendix. 5: Premiums during the period of study**

Statistics	Value
Mean	18
STD error of mean	1
STD dev.	26
Variance	701
Median	14
Valid N	560
<b>Missing</b>	<b>163</b>
<b>Total</b>	<b>723</b>

**Appendix. 6(a): Six-monthly premiums**

Statistics	Groups of half-year					Total
	1 <sup>st</sup> *	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	
Mean	17	21	23	18	18	379
STD error of mean	3	3	4	2	3	
STD dev.	24	27	32	22	24	
Variance	563	725	1022	485	594	
Median	13	19	24	9	12	
Valid N	89	74	59	92	65	

Continued...

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Appendix. 6 (b)

Statistics	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	Total
Mean	18	19	19	9	
STD error of mean	4	4	4	6	
STD dev.	29	29	23	31	
Variance	855	830	535	945	
Median	14	7	14	-	
Valid N	60	59	31	31	181
<b>Valid N total (a) + (b)</b>					<b>560</b>
<b>Missing</b>					<b>163</b>
<b>Total</b>					<b>723</b>

\*1st: means the first half of nine-half covering the period of study starting from 01/01/1987 to 30/06/1991.

Appendix. 7 (a): Premiums by sectors

Statistics	Groups of economic sectors						Total
	1*	2	3	4a	4b	5a	
Mean	-2	18	29	18	33	17	
STD error of mean	8	7	5	2	9	5	
STD dev.	15	28	29	24	25	35	
Variance	216	759	865	588	601	1240	
Median	-	16	28	12	36	18	
Valid N	3	16	32	105	7	42	205

Continued...

Appendix. 7 (b)

Statistics	5b	6	7	8	9	10	Total 1
Mean	19	26	26	17	12	12	
STD error of mean	4	7	3	7	2	5	
STD dev.	32	29	24	15	22	22	
Variance	1023	833	588	235	502	486	
Median	15	22	25	12	6	-	
Valid N	63	16	80	5	163	22	349
<b>Valid N total (a) + (b)</b>							<b>554</b>
<b>Missing</b>							<b>169</b>
<b>Total</b>							<b>723</b>

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\* Numbers on the Table banner refer to the sectors' full names shown on Appendix. 2.

### Appendix. 8: Sectors premiums by six-monthly premiums for 16 groups of 10 or more valid cases

Groups of sectors by six-month	Mean	STD dev.	Valid N
1. Sector 4a by 1st half 87*	17	20	19
2. Sector 5b by 1st half 87	14	42	10
3. Sector 7 by 1st half 87	24	23	14
4. Sector 9 by 1st half 87	7	18	21
5. Sector 4a by 2nd half 87	27	25	18
6. Sector 7 by 2nd half 87	27	26	12
7. Sector 9 by 2nd half 87	14	21	19
8. Sector 7 by 1st half 88	32	25	14
9. Sector 9 by 1st half 88	12	30	21
10. Sector 4a by 2nd half 88	20	25	19
11. Sector 5b by 2nd half 88	21	22	14
12. Sector 9 by 2nd half 88	9	15	27
13. Sector 9 by 1st half 89	12	15	23
14. Sector 9 by 2nd half 89	27	24	19
15. Sector 7 by 1st half 90	26	23	12
16. Sector 9 by 1st half 90	12	22	19

\* For sectors full names, see Appendix. 2.

### Appendix. 9: Premiums by financial markets

Statistics	Groups of financial markets				Total
	LSE*	USM	TM	FC	
Mean	18	18	17	25	564
STD error of mean	1	3	13	6	
STD dev.	25	34	33	8	
Variance	611	1133	1077	62	
Median	14	5	-	25	
Valid N	461	95	6	2	
Missing					159
Total					723

\* For the financial markets full names, see Appendix. 4.

Appendix. 10: Kolmogorov-Smirnov (K-S) Z test for normality

	N	K-S-Z	2-tailed p*
9 groups of six-month premiums	89	1.6560	0.008
	74	0.969	0.304
	59	1.305	0.066
	92	1.949	0.001
	65	1.530	0.019
	60	1.124	0.160
	59	1.582	0.013
	31	1.071	0.201
	31	1.086	0.189
12 groups of sectors premiums	3	0.382	0.999
	16	0.659	0.778
	32	0.581	0.888
	105	1.783	0.003
	7	0.455	0.986
	42	0.928	0.356
	63	1.397	0.040
	16	0.493	0.968
	80	1.737	0.005
	5	0.487	0.972
	163	2.518	0.000
	22	1.479	0.025
16 groups of six-month by sectors premiums	19	1.093	0.183
	10	0.574	0.896
	14	0.781	0.576
	21	1.138	0.150
	18	0.563	0.909
	12	0.659	0.778
	19	0.678	0.747
	14	0.819	0.513
	21	0.982	0.355
	19	0.990	0.281
	14	0.739	0.646
	27	1.699	0.006
	23	0.867	0.440
	19	0.446	0.989
	12	0.601	0.863
	19	1.059	0.212
3 groups of financial markets premiums	95	1.789	0.003
	461	3.278	0.000

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	6	0.903	0.389
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\* P is the significance level.

**Appendix. 11: Bartlett test for homogeneity of variance**

	Bartlett-Box F	P*
9 groups of six-month premiums	2.188	0.025
12 groups of sectors premiums	2.519	0.004
16 groups of six-month by sectors premiums	2.162	0.006
3 groups of financial markets premiums	8.871	0.000

\* P is the significance level.

-The SPSS default  $\alpha$  is equal to 5%.

**Appendix. 12: One-Way ANOVA Sum of Squares/Mean Squares  
between and within groups**

	Sum of Squares	Mean Squares
9 groups of six-month premiums	4849.0680 386857.9472	606.1335 702.1015
12 groups of sectors premiums	19587.7916 368263.5330	1780.7083 681.9695
16 groups of six-month by sectors premiums	15733.0359 141303.9928	1048.8691 533.2226
3 groups of financial markets premiums	3.1499 386218.1005	1.5749 697.1446