



## GOODWILL

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This paper describes the accounting goodwill in UK takeovers between 1976 and 1992. The paper documents the dramatic growth of goodwill in the mid-1980s. Overwhelmingly, this was the result of the economy-wide rise in the valuation ratio. There is also evidence of companies writing down net assets, and of progressive depletion of the equity of acquirers. Though there was an increase in service sector takeovers, the levels of goodwill found in manufacturing takeovers were at least as high.

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### INTRODUCTION

Goodwill is the name accountants give to the difference between the price an acquirer pays for a business, and the value of the individual identifiable assets it acquires. Under acquisition accounting, which is the normal method, the consideration paid is shown at fair value in the acquirer's balance sheet, and in the consolidated balance sheet separable net assets acquired are shown at fair value. In most countries, the goodwill is also carried in the balance sheet as a fixed asset and amortized against income over some period. Companies have had an alternative; they can immediately 'net-off' the goodwill against certain equity reserves in the balance sheet and so avoid diluting reported earnings with goodwill amortisation. Furthermore, by taking 'merger relief', which became available under the 1981 Companies Act, acquirers have been able to net goodwill against the share premium arising on the acquisition. This gives a result which, save for the restatement of acquired assets at fair values, is substantially the same as merger accounting.

UK companies clearly enjoy the netting option, since they have almost invariably chosen it. Indeed, they have usually chosen it even when merger accounting was available.<sup>1</sup> However, in the mid to late 1980s, the rapid

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growth of the goodwill element in takeovers and the widespread use of netting started to cause problems. Acquisitive UK companies were significantly depleting their book equity and some were seeking to restore it by capitalizing intangible assets, and most controversially brands,<sup>2</sup> but without annual amortization. The growth in goodwill was not unique to the UK and, at much the same time, acquisitive US firms, who have to carry and amortize their goodwill, were complaining about earnings depletion and that accounting rules gave UK acquirers an unfair advantage.<sup>3</sup> In 1989, the (then) Accounting Standards Committee reaped a whirlwind of opposition when it proposed that the UK adopt what were essentially the US rules for goodwill (ED 47), and for other intangible fixed assets (ED 52).<sup>4</sup> These proposals did not become an accounting standard. In 1993, the Accounting Standards Board (ASB) invited comments on a number of options, including the existing alternatives of netting and capitalization with amortization, but also a proposal that purchased goodwill be carried in the balance sheet unamortized so long as it was subject to an annual 'ceiling test' to ensure that its continuing value was above cost.

Although there is a large quantity of literature which debates the principles of goodwill accounting, this debate has taken place on the basis of very little discussion or information about the sources and incidence of goodwill. The aim of the present paper is descriptive; it documents the growth of goodwill and seeks to understand the economic factors which created such pressure to change an accounting rule. The analysis is based on accounting disclosure of goodwill by a comprehensive sample of 524 takeovers between quoted UK companies from April 1976 to March 1992, and on a simulation of goodwill levels using the parameters of the whole population of quoted firms.

We show that, as a proportion of the acquirer's net worth, the average goodwill in UK takeovers grew from negligible levels between 1976 and 1983, to 60% in 1988. These levels were maintained until 1991, when the ratio fell back to 24%. Overwhelmingly, the main cause of the growth in goodwill was the steep economy-wide increase in the market value of companies relative to the book value of their assets, that is, the rise in the valuation ratio, in the mid to late 1980s. We also find evidence consistent with companies inflating goodwill by writing down net assets, and evidence that the goodwill problem was enhanced by the progressive depletion of the equity of acquirers in the 1980s. There is little evidence that the growth in goodwill was caused by the payment of increased bid premia for targets, or by targets getting larger relative to acquirers. The growth in goodwill was not a result of the growth of the services sector. Indeed, manufacturing takeovers reported higher goodwill in the mid to late-1980s than did services, broadly defined, or than takeovers in the consumer sector.

The paper proceeds as follows. Section 2 of the paper describes the methodology and data. Section 3 describes the growth in goodwill in the UK, and analysis the sources of this growth. Section 4 explores the impact

of the valuation ratio on goodwill levels by simulating the level of goodwill for the economy as a whole. Section 5 investigates whether the growth in goodwill can be explained by sectoral changes. Section 6 contains concluding comments and relates the findings in this paper to the debate on goodwill accounting.

## METHOD AND DATA

### *Methodology*

The aim of this paper is to describe the growth of the goodwill element in takeovers in the UK over the period 1976–92, and to identify its causes. To do this, we estimate the measure proposed by Higson (1990) in his study of the accounting method used in a sample of UK takeovers to November 1987. He suggested that in a regime like the UK, where the acquirer nets purchased goodwill against balance sheet equity, an appropriate index of the accounting impact of goodwill is the ratio of the goodwill in a takeover to the acquirer's prior net worth.

The ratio of the goodwill in a takeover to the acquirer's net worth can be decomposed into three elements: the proportion of goodwill in the value of the target, the relative size of the target to the acquirer using market capitalization as a measure of size, and the acquirer's valuation ratio which is the ratio of its value to its book net worth. *In notation*, if  $G$  is the goodwill,  $ANW$  the acquirer's net worth, and  $VT$  and  $VA$  the market value of the equity of the target and of the acquirer respectively at the completion date of the takeover, then

$$(1) \quad G/ANW = G/VT \times VT/VA \times VA/ANW$$

Furthermore, if  $VRT$  is the *prebid* valuation ratio of the target,  $p$  is the percentage bid premium, that is, the increase in target value caused by announcement of the bid, and  $r$  the percentage uplift from historic cost to fair value on acquisition, then<sup>5</sup>

$$(2) \quad G/VT = 1 - (1+r)/[(1+p).VRT]$$

Expressions (1) and (2) reveal a number of factors which may generate a shift in  $G/ANW$ , the ratio of goodwill to acquirer net worth.  $G/ANW$  is increasing in the goodwill proportion in target value ( $G/VT$ ). Expression (2) shows that this in turn is:

- (a) increasing in the prebid valuation ratio of the target;
- (b) increased by the target bid premium;<sup>6</sup>
- (c) decreased by the write-up of the target assets from historic-cost to fair value which takes place at acquisition.

From expression (1) the goodwill to acquirer net worth ratio is also

- (d) increasing in the relative size of target to acquirer; and
- (e) increasing in the acquirer's valuation ratio.

We estimate the  $G/ANW$  ratio for takeovers in the sample and decompose it to reveal the influence of these factors by estimating the elements of expressions (1) and (2). It is clear that the main driver of the level of goodwill is the level of the acquirer's and target's valuation ratio. We test this conclusion by simulating expression (1) using data for the whole population of UK quoted firms.

We have data for sample companies on the acquirer and target valuation ratios, on relative size, and on the bid premium. However, we do not have data on factor (c): over most of the observation period, acquirers did not disclose the size of the fair value write-up. However, some inferences can be drawn about this from the simulation exercises.

There are two commonly-voiced hypotheses about the growth in goodwill which both act through the valuation ratio. One view is that the growth of goodwill is, at least in part, attributable to a compositional shift from manufacturing to services in the UK economy.<sup>7</sup> The implication is that services have lower recorded (= tangible) assets and thus higher valuation ratios. We test this hypothesis directly by scrutiny of the firms in the sample. The second view is that the impact of goodwill was increased during the merger wave of the mid-1980s by the cumulative erosion of the book equity of acquisitive firms through previous goodwill write-offs. Data is not available to reconstruct the goodwill write-off history of firms in the sample, but we again use the simulation to provide indirect evidence on this.

#### *Data sources*

To conduct the analysis of this paper, we require data on book net worth from both the acquirer's and the target's last annual report prebid. To find the market value of the equity, we require each firm's market capitalization on completion, measured as the share price times the number of shares in issue. To find the bid premium, we need the share price history from the beginning of the takeover announcement month to the completion of the bid for the target. Accounting and share price data are available for UK firms on the Exstat tape and the London Share Price Data tape (LSPD), respectively. LSPD reports market data for all UK quoted companies since 1975, and about two thirds of quoted companies from 1948–75. Exstat collects published accounts data, starting in 1970 on a population consisting of quoted UK firms, and other members of the Times 1000. The Exstat coverage was expanded in 1975–76 to include smaller quoted firms, and for this reason we start the sample period in 1976. The goodwill figure, and the method of accounting for the takeover, are not recorded on database. To discover these, we inspected the next annual report of the bidder in hard copy or on microfiche. We also require a number of key dates: the date that the information about the bid first became public, the date of the

first bid, and the date the bid became unconditional. Annual reports do not report the first two dates, nor in some cases the completion date. These were collected from Extel cards, and from contemporary coverage in the financial press. Finally, we collected evidence from the annual report and from Extel cards of any existing stock holding or 'toehold'.

### *Sample*

The earliest takeover in the sample is in April 1976, and the latest is in April 1992. 1445 companies are recorded on LSPD as being acquired between these dates. We have the following requirements for inclusion in the sample: (a) both acquirer and target have their prebid annual report recorded on Exstat; (b) an LSPD record is available for both firms for 2 years before the bid, and for the combined entity for 2 years after completion. The main restriction imposed by these criteria is that both acquirer and target should be UK quoted; (c) the post-takeover annual report of the acquirer is available in hard copy or on microfiche, and reports the accounting method and the consideration paid for the target and, in the case of an acquisition, reports the goodwill and net assets at fair values for the acquisition, or in total for all of its acquisitions in the year. We also exclude takeovers involving financial companies, and takeovers involving investment trusts.

524 takeovers meet these criteria. Table 1 reports the takeover accounting method used in these takeovers. Merger accounting was used in 47 of the 524 takeovers, peaking in 1987 when 20% of takeovers in the sample were merger accounted. Where merger accounting is used, no goodwill is recorded. Hence, the results in this paper are based on the 477 acquisition-accounted takeovers.

The data requirements and the varying levels of goodwill disclosure are potentially restrictive. In the next subsections, we discuss the quality of the accounting disclosure of goodwill in detail, and we examine the *representativeness* of the sample described above.

### *Accounts disclosure of goodwill*

The goodwill in an acquisition is the difference between the fair value of the consideration given and the fair value of the identifiable assets acquired. During the period of this study, the fair value of assets effectively means the fair value of tangible assets as it was only with rare exceptions that companies included intangibles in the fair value exercise. The consideration consists of some mixture of shares, cash, and bonds and other securities. Fair values are measured at the date of completion of the takeover.

There are two limitations of accounting disclosure during the period of this study which make the observation of the goodwill element in takeovers far from straightforward. In both cases, inadequate disclosure is widespread

TABLE 1

*The Table reports the annual number of firms in the sample, compared to firms reported as acquired on LSPD. The Table also shows how many takeovers were merger, and acquisition, accounted. Finally, the Table reports the proportion of service takeovers on LSPD and in the sample, the latter using (a) the SEC definition and (b) the narrower definition described in the text.*

	Number on LSPD	Number			% services		
		Sample	Merger	Acqui- sition	On Ispd	Sample	
						(a)	(b)
1976	98	12		12	24	25	8
1977	114	34		34	25	24	15
1978	86	27	1	26	29	22	4
1979	75	17		17	17	12	12
1980	67	16	1	15	25	19	6
1981	59	19		19	22	26	16
1982	75	19	2	17	23	25	16
1983	58	19	2	17	22	21	5
1984	83	47	3	44	37	38	21
1985	63	52	7	45	30	27	17
1986	150	56	7	49	40	30	25
1987	125	81	16	65	38	21	21
1988	87	43	5	38	37	21	9
1989	99	35	2	34	34	22	19
1990	103	20		20	42	35	25
1991	103	26	1	25	40	12	19
	1445	524	47	477			

and the level of disclosure varies systematically through time. For both these reasons, the conventional expedient of excluding non-disclosing firms from sample is not an option. Instead, we use other available data to form the goodwill estimate in these cases.

The first limitation concerns the use of merger relief which has permitted UK acquirers to reduce reported goodwill to the extent of any share premium arising on the acquisition. As Higson (1990) notes, merger relief became available until 1981, but did not come into common use until 1983–84, after which time merger relief was almost universally taken in equity-financed takeovers. Seemingly, there was a delay before the opportunity afforded by merger relief was recognised by acquirers and their advisers. In any case, as we show later, the average level of goodwill was negligible before this date. The effect of taking merger relief is to reduce the apparent goodwill. There are several possibilities in terms of disclosure. Ideally, the accounting policy statement indicates that merger relief has been taken, and the accounts state the amount, so it can be added back to goodwill. On other occasions, while not explicitly recording the amount of merger relief, the acquirer will

separately report the fair value of the consideration, thus effectively conveying the same information. However, in many cases we found no internal data in the post-takeover accounts to permit the user to determine the fair value of the consideration. In this case, we value the issued equity using the acquirer's share price on completion. This is unproblematic, and it is the exercise which the company itself would undertake. However, it provides an insight into the sufficiency of UK acquirers' accounts for judging the fair value of the acquisitions they made over this period. Takeovers were excluded from sample on these grounds only on the (rare) occasions where both the acquirer's accounts gave no indication of the structure of the consideration—that is the quantity of equity, cash, and so forth, issued—and this data was not available from outside sources such as the Financial Times or the FT Mergers and Acquisitions.

The second problem concerns the disclosure of the fair value of the net assets acquired. Again, a fully disclosing acquirer will report both the acquired net assets at fair value, and the acquired goodwill. If we are told the fair value of net assets but not the goodwill, then the value of goodwill can be deduced if we also know the fair value of the consideration. However, rarely if ever did firms disclose one without the other. Much more common was for firms which made multiple acquisitions within a year to disclose the fair value of net assets acquired, and the goodwill in total rather than for each takeover. Multiple acquisitions are prevalent. Where the acquirer disclosed no data about acquired net assets, the takeover was excluded from the sample. However, consistent with the focus of this study, when the acquirer discloses net assets in total we retain the takeover in sample, and prorate the acquired net assets and goodwill, so long as the fair value of the consideration is separately identified for the sample takeover and for takeovers in total, and so long as all the acquirer's acquisitions in the year are in the same industry. Slightly less than half of the 477 takeovers are partially disclosing in this way. The prevalence of full disclosure of goodwill changes through time. 1989 was a turning point in disclosure; 84% of takeovers have fully disclosed goodwill from 1989 onwards. There is a systematic tendency for larger takeovers to fully disclose, though this is not as marked as might be expected. When the sample is split into equal annual partitions by target size (market capitalisation), 45% of smaller takeovers fully disclose, against 55% of larger takeovers. The next subsection suggests that these sampling criteria yield a sample which is representative of the population. Further support is provided by the simulations in Section 4, which generate predicted levels for goodwill in the population as a whole which closely track those found in the sample.

#### *Representativeness of the sample*

Since the data requirements for the study are potentially restrictive, it is important to establish how representative the sample is of the population.

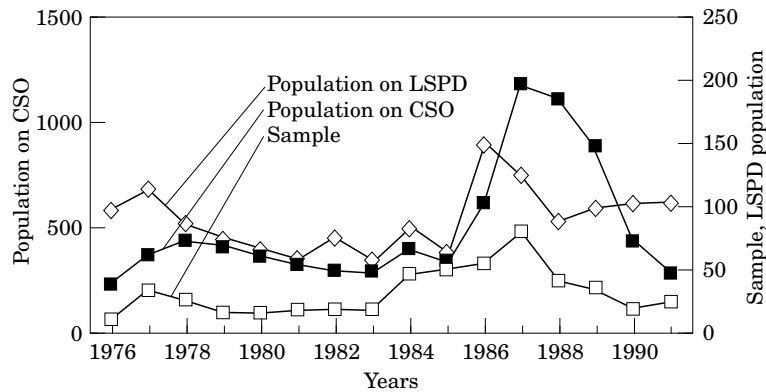


Figure 1. The pattern of takeover activity. The figure compares the annual number of takeovers in the sample with (a) the number of takeovers of non-financial quoted companies recorded on Exstat, and (b) takeovers of independent companies of all types reported by the CSO.

Figure 1 shows the distribution of the sample through time, and compares it to the incidence of takeover on the LSPD tape and to the aggregate of UK takeover activity from UK Central Statistical Office (CSO) statistics. For expositional convenience, the six 1992 takeovers are included with 1991 in this Figure and in subsequent analysis. The level of takeover activity in the sample clearly follows much the same pattern as the population, with a modest peak in 1977, and an overall peak of takeover activity in 1986–87. It is evident that there is some difference in the profiles of the two populations after 1985. The series of quoted takeovers on LSPD leads the CSO series of all takeovers by one period, with the sample falling in between.

One hypothesis about the growth in goodwill in the mid-1980s which we test below, is that it was caused by an increase in the number of service sector takeovers, reflecting the decline in the manufacturing base that took place in the early 1980s and the continuing growth in the UK services sector. Table 1 suggests that there was some increase in service takeovers. Using the new (post-January 1994) Stock Exchange Classification (SEC) system, which distinguishes ‘services’, ‘consumer’, and ‘manufacturing’ as primary sectors, the Table shows that whilst between 1979–83 service takeovers ranged between 17 and 25% of the total, between 1984–91 they ranged from 30 to almost 42%. But it would be misleading to identify service companies, thus defined, as low-tangible-asset companies. The SEC services definition includes some notably ‘asset-heavy’ businesses: food retailers, motor distributors, and hotels. So we also show the proportion of takeovers on a more limited definition of services which excludes some of the more obviously asset-based businesses; we include software, non-hotel leisure, media, mail-order, business services, and miscellaneous. Although



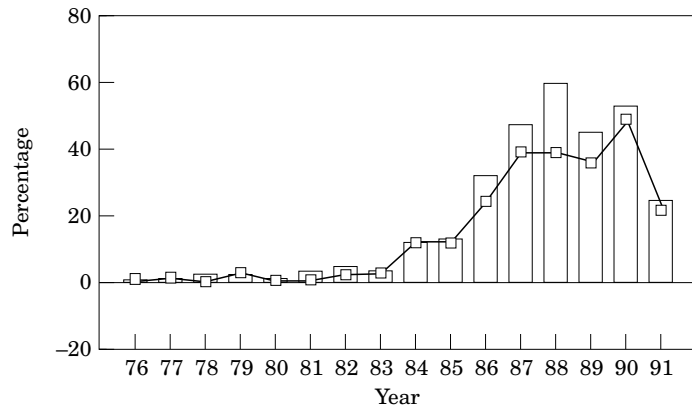


Figure 2. The growth of accounting goodwill. This figure plots the annual equal-weighted average ratio of the accounting goodwill in each takeover to the book net worth of the acquirer at its previous accounting year end, with the bottom and top quartile excluded. The solid line shows the medians.

the proportion of service takeovers on this definition is rather variable year-on-year, there is again a discernible increase post-1984. In the subset which meet the tests for inclusion in the sample, the incidence of service takeovers is rather lower than in the population, and there is a less clear-cut rising trend.

### THE GROWTH OF GOODWILL

Figure 2 plots the average ratio of goodwill to acquirers' net worth for the period up to April 1992. Between 1976–83, goodwill was negligible: in no year averaging more than 4% of acquirer's net worth. It rose in 1984 and 1985 to around 12%, then grew dramatically, touching 60% in 1988. These high levels were maintained until 1991, when the ratio fell back to 24%.

For consistency with Higson (1990), the averaging procedure in Figure 2 is the annual equal-weighted mean of the interquartile observations, that is, of the middle 50% when ranked on the ratio. There are two reasons for choosing this measure of average. An equal-weighted measure is preferred, since a value-weighted measure is dominated by a few very large takeovers, and the interquartile observations exclude outliers which are likely to distort an equal-weighted average. Further, it offers the advantage relative to the median of giving an index which can be meaningfully decomposed. However, Figure 2 also plots the annual median G/ANW ratio, which shows much the same trend though it lies below the mean in most years.

The quite striking growth in goodwill is emphasised by examining the incidence of negative goodwill. Negative goodwill occurs when, even after

paying a bid premium of perhaps 20 to 30%, the target is acquired at below asset value. In the 1970s this was common. Twenty-nine percent of targets in our sample between 1976–81 had negative goodwill. Nine percent of the sample between 1982–85 showed negative goodwill. But between 1986–91, negative goodwill was rarely seen: it occurred in only four cases, less than 2% of the sample.

We use the median and equal-weighted interquartile mean as measures of central tendency since, being a ratio, the descriptive variable used here can very easily take extreme values in the tails of the distribution. The median is a robust measure of average in these circumstances, and it is reassuring that it tracks the interquartile mean rather well. However, we also checked the representativeness of these measures further, to see whether the use of an equal-weighted average was concealing systematic differences in relative goodwill levels between large and small takeovers. This is not the case. Takeovers in the sample were ranked by target size in each year and split into numerically equal groups of large and small takeovers. There is no systematic difference between the median goodwill ratio of the large and small takeover groups.<sup>8</sup>

#### *Drivers of goodwill growth*

We use the framework of expressions (1) and (2) to identify the factors which caused this growth in goodwill. Figure 3 (a) plots the relative size of target to acquirer over the sample period in terms of both the annual median and the (interquartile) mean as before. In this case, the measure of size is the market capitalization on completion. There is evidence of a small increase in the average ratio of target to bidder value in the sample by the end of the period: the median ratios were 0.21 for 1976–81, 0.17 for 1982–85, and 0.25 for 1986–91.<sup>9</sup>

Figure 3 (b) plots the remaining two elements in expression (1): the mean proportion of goodwill in the value of the target, and the acquirers' mean valuation ratio. The goodwill element in target value rose significantly after 1983, and the acquirer's valuation ratio shows a similar trend. Whereas in the earliest years studied the median ratio of goodwill to target value was around 20%, this fell in the years up to 1991. However, it rose rapidly thereafter so that between 1986–91 goodwill averaged over 70% and sometimes 80% of the value of the target.<sup>10</sup>

Other things equal, the goodwill element in target value will increase with the bid premium. A good deal of research evidence is available on bid premia. We know that they are higher in hostile takeovers, and are higher in takeovers where the consideration is cash rather than equity.<sup>11</sup> On both these accounts, we would not expect bid premia to have increased in the mid-1980s since in the UK merger boom of the mid-1980s there were relatively few hostile takeovers and there was a significant shift towards using equity rather than cash as consideration.<sup>12</sup> Indeed, measuring abnormal

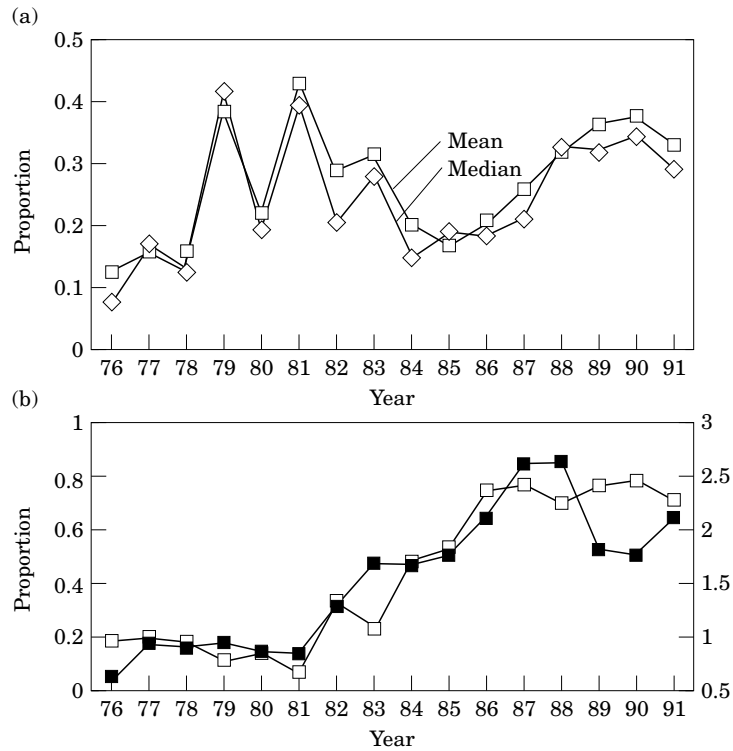


Figure 3. (a) Relative size. The figure plots the annual median and (interquartile) mean ratio of target's to acquirer's completion market capitalization. (b) The drivers of goodwill growth. This figure shows the mean ratio of goodwill to target value, and the ratio of acquirer value to acquirer net worth (■, right axis).

returns over the period starting at the beginning of the announcement month through to the end of the month in which the bid is completed, we find a *decline* in mean sample bid premia from 32% (median 30%) during 1976–84, to 21% (median 21%) during 1985–91. By measuring returns from the beginning of the announcement month, we permit some bid anticipation in the period before the bid is formally announced. If the bid premium is measured starting 3 months before announcement, then the mean abnormal return was 34% during 1976–84, and 21% during 1985–91.

In summary, the growth in goodwill was not driven by increasing bid premia, or by shifts in the relative size of targets and acquirers. In fact, the decline in bid premia offset any increase in the relative size of targets over this period. The principal explanation for the growth in goodwill is the rise in the valuation ratio which took place between the mid-1970s and the late 1980s.

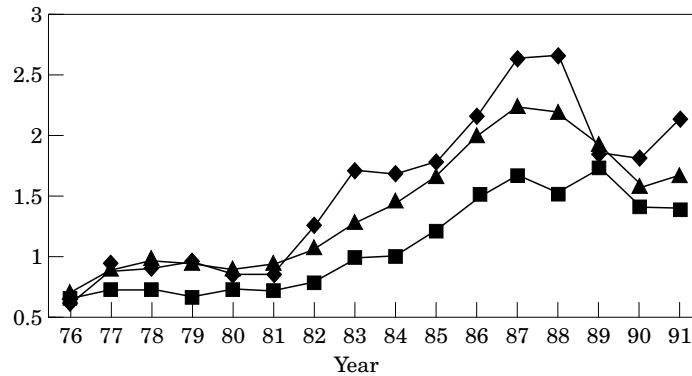


Figure 4. Valuation ratios. The figure plots the (interquartile) mean valuation ratio for the sample against the equal-weighted and value (market capitalization)-weighted average from LSPD. Since small firms are numerically dominant the equal-weighted index can be thought of as a small firm valuation ratio, and correspondingly the value-weighted average as a large firm ratio. (■) large firms; (◆) sample; (▲) small firms.

### ROLE OF THE VALUATION RATIO

In this section, we explore the role of the valuation ratio further, using data for the population of quoted firms, and using simulation analysis. Figure 4 plots the average valuation ratio for companies on LSPD over this period. Consider first the value-weighted line, recalling that the value-weighted results are dominated by large firms. The value-weighted valuation ratio plunged from well over unity at the beginning of the 1970s to 0.43 after the 1974 stock market crash. The subsequent recovery was very slow and the average valuation ratio remained below unity until 1984. Thereafter, the rise in the valuation ratio of the firms was steep, and it peaked at 1.68 in 1987 and 1.72 in 1989. The equal-weighted ratio describes the experience of smaller firms, since smaller firms predominate numerically. Smaller firms tend to have higher valuation ratios. The equal-weighted line follows a similar path, but at a higher level, and peaked at 2.24 in 1987. After 1989, the equal-weighted ratio fell rather sharply, consistent with the widely-reported underperformance of the small firm sector at that time, recovering in 1991 and 1992 to broadly the same level as 1971. In 1990–91 the value-weighted index was 1.41 rising to 1.54, compared with 1.19 in 1971.

Most of the growth in goodwill as a proportion of target value for firms in this sample and which was described in Figure 3 (b) is explained by the movement in the *aggregate* valuation ratio over the period. We show this by simulating the goodwill implied in the aggregate numbers. Figure 5 simulates equation (2), assuming a bid premium,  $p$ , of 25% and a fair-value write-up,  $r$ , of 0%, and assuming that the valuation ratio, VRT, is respectively the large firm (value-weighted) ratio and the small firm (equal-weighted) ratio.

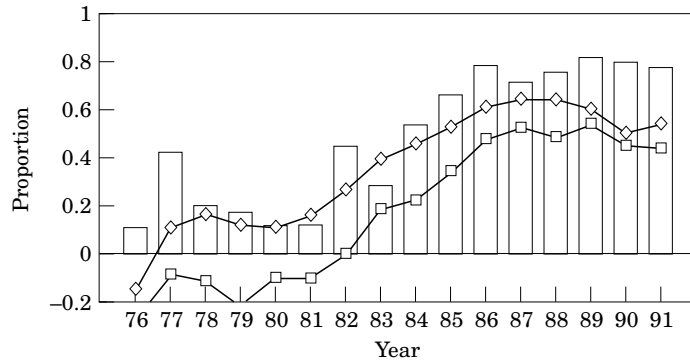


Figure 5. Goodwill in target value: Simulated and actual. The figure compares the ratio of goodwill to target value for takeovers in the sample to a simulation for large (□) and small (◇) targets.

Assuming these parameters, we would predict goodwill as a percentage of value for small firm targets to be negative in 1976, between 10 and 20% thereafter up to 1981, and to rise to almost 65% in 1987. For large targets, we would expect negative goodwill, of between  $-10$  and  $-20\%$  in most years up to 1982, but positive goodwill thereafter rising to a peak of 52% of value in 1987, and 53% in 1989.

In summary, *given the valuation ratio in the population*, even after adding a bid premium the average large firm would have been acquired at up to 20% below book in the years to 1982. However, by 1987, more than half the acquisition price would have been represented by goodwill.

Since targets in takeovers are commonly smaller firms, the ratio of goodwill to target value in the sample is best tracked by the simulation which uses the equal-weighted ratio. For comparison, Figure 5 also shows the sample ratio of goodwill to target value from Figure 3 (b). This is tracked rather well by the equal-weighted simulation up to 1987. However, while the simulated series declines after 1987 the proportion of goodwill to target value in the sample remains at a high level, a level apparently not merited by the general level of share prices.

#### *The effect of the fair value adjustment*

We have assumed in the foregoing simulation that the fair value write-up,  $p$ , was a constant 0%. However, it could be argued that the fair valuation of the capital stock on acquisition is likely to act as a corrective to observed target valuation ratios, which use book values in the denominator. The fair value exercise is essentially a write-up from historic cost to replacement cost of the target's assets, the extent of which cannot be observed in accounting data over this period. Moreover, since the rate of inflation fell

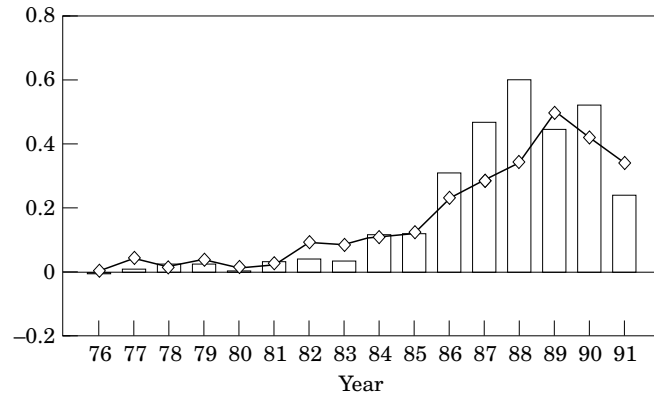


Figure 6. Goodwill to acquirer net worth: simulated and actual. The figure compares the ratio of goodwill to acquirer net worth for takeovers in the sample to a simulation of equation 1 ( $\diamond$ ), assuming acquirers are large firms.

significantly in the UK between the mid-1970s and late-1980s, we would expect the gap between historic cost and replacement cost to be wider in the earlier period, so that the earlier observations of the valuation ratio will be relatively overstated. However, one striking implication of Figure 4 is that valuation ratios in the UK have been lowest when inflation was highest. The implication of this for the present results is that, since our simulation is likely to overstate the element of goodwill which arises from the target valuation ratio in earlier years, the levels of goodwill in that period will be even more negative.

Whatever the proportion by which book equity has understated the replacement cost of the capital stock, for a number of reasons, UK companies may have been disinclined to recognise this (Higson & Elliott, 1994). It is not possible to ascertain from published data available during the period of this study the proportionate fair value adjustment on acquisition, let alone if the write-up or write-down was truly 'fair'. However, there was a good deal of concern in the late 1980s about excessive provisioning. For example, Grinyer *et al.* (1991) find evidence of UK acquirers trading-off earnings and gearing enhancement in their goodwill valuation. The gap which emerges in Figure 5 after 1987 between actual and predicted goodwill is consistent with acquirers writing *down* net assets by around 40% during that period.

#### *Equity depletion in acquirers*

Figure 4 plotted the average valuation ratio for acquirers in the sample against the large and small firm averages from LSPD. Whilst we would expect the acquirer line to lie between these, for an extended period up to 1988 acquirers in the sample had a valuation ratio well above either average. We simulate the effect of this in Figure 6. Here, we project a simulation of

TABLE 2

*Sector analysis*

*This Table reports median and (interquartile) mean goodwill to acquirer net worth (GW/ANW) ratios for SEC manufacturing, consumer, and service sectors, and for a narrower 'pure services' sector over the sub-periods 1976–83 and 1986–91.*

Industry	Period 1976–83				Period 1986–91			
			GW/ANW				GW/ANW	
	Number	as %	Mean	Median	Number	as %	Mean	Median
Manufacturing	100	68%	0.5%	0.3%	147	66%	59.3%	46.0%
Consumer	13	9%	1.1%	1.0%	20	9%	19.6%	9.6%
Services	33	23%	5.2%	2.6%	55	25%	39.9%	34.5%
Total	145	100%			222	100%		
Services (more limited definition)	13	9%	12.7%	12.6%	29	13%	73.8%	41.2%

equation (1) onto the chart of goodwill to acquirer net worth from Figure 2. In this simulation, we assume the actual annual average of goodwill to target value, and actual relative size, but that the acquirers' valuation ratio was the ratio for large firms as a whole. Clearly, a good part of the relative growth of goodwill between 1986–88 was attributable to very high acquirer valuation ratios at that time. This may be a symptom of the equity depletion suffered by acquisitive UK firms as they netted-off goodwill during the merger wave; the results of the simulation are consistent with such depletion.

### SECTOR DIFFERENCES

Was the rise in the valuation ratio, and thus in goodwill, driven by a general rise in stock prices or by a shift in the structure of the UK economy towards service companies with endemically high valuation ratios? Table 2 shows the median and mean values of the goodwill to acquirer net worth ratios for the sample by the three main SEC sectors: manufacturing, consumer, services, and for two epochs: the period of negligible goodwill, 1976–83; and of high goodwill, 1986–91. The proportion of firms in the three sectors is barely changed between the earlier and later period. Hence, the growth of goodwill is not a construct of change in the composition of the sample.

As noted in Section 2, the data requirements for this study mean that the growth in services takeovers in the population is not fully reflected in the sample, which has rather more service takeovers than the population in the earlier period, and rather less than the population in the later period.

What is notable, is that in the high goodwill period of the mid- to late-1980s, goodwill levels are *higher* in manufacturing than in services. The SEC services sector includes many asset-heavy firms, so we report results for a more limited ‘pure services’ sector. The goodwill to acquirer net worth ratio for this group is also reported in Table 2. Even for this group, the median goodwill ratio is below that of manufacturing in the mid- to late-1980s. However, the mean is rather higher, suggesting, as would be expected, some very high goodwill takeovers in the upper tail. There are more pure service takeovers in the second period, 13 as against 9%, but this increase is a small one, and not sufficient to materially effect the overall results. We conclude that the dramatic growth in goodwill recorded in this paper was not caused by a shift towards service sector takeovers.

### CONCLUDING COMMENTS

This paper documents the explosion of goodwill in the mid-1980s which triggered the active debate about goodwill accounting in the UK. The source of this growth in goodwill was, predominantly, a single factor—the steep economy-wide rise in the valuation ratio which took place at that time. This followed a decade during which, after the 1974 crash, valuation ratios had remained relatively low, and when levels of goodwill had been negligible.

Accounting upheavals commonly follow a significant shift in some fundamental economic variable. Accounting measures that perform tolerably well in one world prove not to be robust in the new circumstances. An example was the historic cost *vs* current cost debate. In the highly inflationary environment of the mid to late 1970s, the pressure to shift to a current cost accounting base became intense. However, when inflation subsequently declined, this pressure ebbed away too; at inflation rates below 10%, historic cost accounting apparently offered measures of income and return which users found acceptable.

A pertinent question is whether the problem of goodwill will ebb away in a similar fashion. Given the difficulty which rule-makers have found in crafting a reform which is acceptable to the accounting constituency, this would be an attractive outcome. Indeed there *was* a decline in goodwill towards the end of the period studied, following a fall in the underlying valuation ratio. The valuation ratio has followed a very long cycle, which makes it hard to be confident of its equilibrium level. However, rule-makers should assume that the valuation ratio will continue above unity and that there will continue to be significant goodwill in takeovers. With hindsight, it is probably the decade of minimal goodwill after the 1976 crash which was aberrant, and the very low levels of stock prices relative to asset values was widely noted at that time.<sup>13</sup>



It is sometimes suggested that the goodwill emerged because of a shift in the structure of the economy, and thus in the composition of takeover activity, towards services. Services, it is argued, are less capital intensive and more likely to use intangible assets which are hard to recognise under existing accounting rules. This argument was also to the fore during the brands debate, encouraging rule-makers to facilitate the recognition of intangible assets. This paper shows that the growth of goodwill was not due to a growth in the service sector. There was an increase in service takeovers, but much service activity is capital intensive, and manufacturing displayed higher levels of goodwill. Even the 'pure service' sector does not display significantly higher levels of goodwill than were found in manufacturing.

Fair valuation is an exercise which offers scope for managerial discretion. The UK goodwill accounting regime which permitted immediate expensing of goodwill appears to have encouraged the undervaluation of acquired net assets, and so the understatement of the cost of using those assets. This is because the effect of writing-down net assets, whose consumption may have to be charged against earnings, is to 'write-up' the residual goodwill whose consumption does not reduce earnings.<sup>14</sup>

## NOTES

1. Higson (1990) found almost no acquirers carrying and amortizing goodwill in a sample of 373 UK takeovers over the period 1976–87. Goodwill, and thus the need to amortize it against earnings, does not arise under merger accounting or 'pooling of interests', and countries such as the USA have had to impose strict tests to limit the use of merger accounting. Higson showed that while the UK tests were fairly permissive, relatively few companies which could have used merger accounting did so.
2. The link between the growth of goodwill and 'brand accounting' at this time is explored in Barwise *et al.* (1990).
3. See for example, 'Goodwill Is Making A Lot Of People Angry', *Business Week*, 31.7.89.
4. Continental European regulations were typically much more limiting, and in 1992 the International Accounting Standards Committee issued an exposure draft, E45, which proposed a maximum life of 5 years for purchased goodwill.
5. Suppose  $V^*T$  is the target value prebid. Since target prebid net worth is  $TNW = V^*T / VRT$ , goodwill,  $G = (1+p)V^*T - (1+r)V^*T / VRT$ . So  $G/V^*T = [(1+p) - (1+r) / VRT] / (1+p)$ .
6. For convenience, and without doing too much violence to the facts, we ignore any announcement period abnormal return that may occur on the acquirer's side.
7. See, for example, Arnold *et al.* (1992).
8. We also partitioned the sample into acquirers which fully disclose and those which partially disclose their goodwill. No systematic difference is evident in most years, in the ratio of goodwill to acquirer net worth in the two groups, except for the years 1986 and 1987, when there are significantly higher goodwill levels in fully disclosing firms.
9. These results use values on completion, which in the targets' case contain the bid premium. Hence they are broadly consistent with results from other studies on the relative size of targets and acquirers. [See, for example Franks & Harris (1989); Higson & Elliott (1998)].
10. Irrespective of whether the median or the mean is used.

11. Higson & Elliott (1998), Servaes (1991); Franks & Harris (1989); Travlos (1987).
12. See Higson (1990).
13. By Franco Modigliani, amongst others. His observation of  $q$  ratios well below unity led him to conclude that stocks were significantly undervalued, though this view was not universally accepted. See Modigliani & Cohn (1979).
14. Grinyer *et al.* (1991) found managers making a trade-off between reducing earnings and increasing book gearing in their decisions about the valuation of goodwill.

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