FAILURES, ACQUISITIONS AND POST-MERGER SUCCESS: THE COMPARATIVE FINANCIAL CHARACTERISTICS OF LARGE AND SMALL COMPANIES

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Abstract

This paper analyses on a univariate and multivariate basis the financial characteristics of companies which are acquired with those which fail, and compares both in turn with those companies which survive in the UK company sector 1977-82. The impact of acquisition on post merger performance is also examined. The sample analysed covers the whole of the UK company sector and allows comparison between the largest and smallest companies. Acquired companies are shown to be less distinguishable from surviving companies than are failing firms, and acquisition has an insignificant impact on profitability. Larger firms which failed or were acquired were significantly worse performers than the small failing or acquired firms.

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Key Words: Company Failure, Company Takeover, Financial Performance.

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Introduction

This paper compares the characteristics of companies which fail and of companies which are acquired, (both before and after takeover), with the characteristics of companies which continue in independent existence. It is thus directly concerned with the nature of the selection process in both the capital and product markets. The paper is located at the intersection of two very large literatures which have tended to study failure and acquisition independently. Both literatures are concerned with what may be termed company 'death', in the sense that they deal with events that lead to the loss of independent corporate existence. In the case of acquisition however, a company, and its capacity to produce, may continue to exist albeit as a subsidiary of its parent, and a large literature has developed which assesses the efficiency of these ownership changes[1]. In the case of failure on the other hand the usual outcome of the event under study will be the removal of capacity from production and the emphasis is upon the efficiency implications of this removal rather than of its transfer to alternative management[2]. The merger and failure literatures have in the main developed independently, although the possibility of a choice between merger and failure has been the subject of debate in the past in the context of the 'failing firm' doctrine in U.S. Anti-Trust policy[3], and more recently in terms of the creditor and shareholder implications of failure versus acquisition (Peel (1990)).

Our concern in this paper is to analyse differences in the nature of the selection process in large and small firms, and in doing so to consider whether the characteristics of failing firms are systematically different from those which are acquired. We consider not only the relative characteristics of firms which die compared with those which survive but also the impact of acquisition death upon subsequent company performance. In carrying out this analysis we make use of a unique stratified sample covering the whole UK corporate sector and combine case study and statistical analyses.

The paper is organised as follows. Section 1 briefly considers existing literature which bears on the selection process in large and small firms. Section 2 then describes our data and variables and considers variations in death rates by size and industry. Sections 3 to 5 then present the main empirical results and are followed by a conclusion.

1. Large and Small Firms, Deaths and the Selection Process

It is a widely recognised 'stylised fact' that smaller businesses fail proportionately more frequently than larger businesses, and there is a large literature concerned with either predicting failure on the basis of financial ratios or explaining failure patterns using qualitative and/or quantitative variables. This has, however, focused either on large firms failure (eg for the UK Goudie (1987)) or small firms (eg for the UK Storey et al (1987) Cressy (1992)), rather than the company population as a whole.

Thus a literature emerged from the 'failing firms' doctrine which was partly concerned with how failure could be predicted (see e.g. Blum (1974), Altman (1983)), and partly with the question of whether it was reasonable to regard acquisition as simply 'a civilized alternative to bankruptcy, or voluntary liquidation, that transfers assets from failing to rising firms'[4] (Dewey (1961). Conn (1976) for instance examined the comparative profitability of pairs of acquiring and acquired firms, and their industry profitability, and found more similarities than differences, hence casting doubt on the idea that acquired companies or their industries were more distinctively 'failing' than other companies or industries. On the other hand Shrieves and Stevens (1979), using Altman's failure prediction model, (Altman (1968)), classified two samples of acquired and non-acquired firms, into likely failures and likely survivors. They found around 15% of the acquired group were likely failures compared to around 5% of the non-acquired group.

These studies did not however compare failed companies directly to acquired companies. This has been partially addressed in some recent work which has sought to compare the characteristics of 'distressed' acquired companies, (identified using a similar strategy to Shrieves and Stevens)

with the characteristics of actual failed companies (Pastena and Ruland (1986), Peel and Wilson (1989), Peel (1990)). In the case of Peel (1990) there is also a comparison of the characteristics of both 'distressed' acquired companies and liquidated firms with non-failing firms. His study covers 119 U.K. quoted companies in the period 1972-79 (47 failed, 40 randomly selected non-failed, and 32 'distressed' acquired). The conclusion reached on the basis of both univariate and multivariate analyses is that 'companies which failed were more acutely financially distressed than distressed ones which were acquired;' (Peel (1990) p80) and that both were more financially distressed than non-failing companies. In some ways the result for distressed acquired firms relative to non-failing firms is to be expected since the former were chosen on the basis of indicators of financial weakness. It also leaves unresolved the questions of: (a) whether acquired companies as a group are distinguishable from failing and non-failing companies, or whether, as different manifestations of the same selection process, one is indeed simply a 'civilized alternative' to the other and; (b) whether the reallocation of assets between managements via acquisition leads to an improvement in the efficiency with which those assets are used. Although the latter question has been frequently addressed in relation to large, and especially quoted companies it has rarely been addressed for smaller firms. A notable exception is the work of Ravenscraft and Scherer (1987), who analyse the impact upon performance of smaller businesses bought and sold by US conglomerates in the 1970s. They show that such businesses were typically above average performers before acquisition and were rarely motivated to sell out for reasons of financial distress. They also show that the acquired businesses suffered performance declines as a result of acquisition[5]. Whilst the latter result echoes a number of well known studies for larger quoted company acquisitions, the former finding contrasts with the usual result that acquired quoted companies are less than, or equally as profitable as non-acquired firms.

The principal problem when assessing merger success or failure objectively is the lack of information about the acquired company after the takeover. In takeover studies of large companies this is usually tackled by inferring the impact of the takeover by observing the post-acquisition performance of the acquirer (e.g. Cosh, Hughes and Singh (1980), Meeks (1977)). This

approach is not practical when analyzing the acquisition of small companies. In such cases their impact on the acquirer is generally small even when a significant change is brought about in the acquired company (i.e. the effect is swamped by the generally much larger size of the acquirer). An alternative method adopted in evaluating merger success amongst samples of large company acquisitions is the share price event study methodology. This method is not available to those evaluating acquisitions of small, unquoted companies.

Our analysis of acquisition effects results from a different approach. From amongst the large sample of acquired companies whose pre-merger characteristics are reported in comparison with failed firms in the first part of this paper, we have identified 40 companies for which financial information was available in separately published accounts which continued to be available for at least three years after the takeover. This has allowed us to trace the performance of these acquired firms from before the takeover to several years after using its own accounts throughout.[6] This analysis of merger success is of interest for a number of reasons. First acquisition activity is a significant, but relatively neglected, aspects of small business growth. Thus a 1991 national survey of small and medium sized businesses employing less than 500 workers revealed that over 20% had made one or more acquisitions in the previous 5 years, whilst around a quarter had received takeover proposals in the same period (SBRC (1992)). Moreover, acquisitions for which the consideration paid was less than £1m accounted for over 40% of all industrial and commercial company acquisitions in the period 1985-88. Despite this, very few studies of mergers include smaller firms and those that do relate to periods in the 1960's or are based solely on very small numbers of case studies often of individual firms (for recent reviews see Hughes (1993) and Cosh and Hughes (1994)). Second there are no studies which allow a direct comparison of the performance impact of mergers involving large and small businesses. These comparisons are of interest because recent policy interest in small firms, has led to growing concern that various 'barriers to growth' lead to smaller businesses selling out to larger firms with consequent losses of entrepreneurial directors and adverse effects on the flexibility, or efficiency, of their businesses (ACOST (1990)).

2. The Data

2.1 The sample: numbers of companies and variables

The full sample is drawn from a Department of Trade and Industry Business Statistics Office database of over 2000 companies. It is a stratified sample of companies registered at Companies House in 1975 with sampling proportions ranging from 1 in 1 of the largest 500 companies to 1 in 2 of the next 1000 companies and 1 in 360 of the remainder smaller companies[7]. The sample covers the period 1977-1982 and includes 182 failures and 142 acquisition deaths. Each company is classified to a broad 2 digit industry classification in the Non-Financial Sector.

For each of our sample companies we derived 35 measures of financial and other characteristics a selection of which are presented here. These included measures of size because the literature on failure and on acquisition both emphasize a potentially causal role for size. In relation to failure the extensive discussions of sample selection bias in estimating growth rates by size of firm is based on the idea that smaller firms are more likely to fail at least in part because their size stands as a proxy for their youth and inexperience. In relation to acquisition the argument for a (non-linear) size/acquisition relationship is based on a joint appeal to the lack of acquiring companies big enough to swallow the very largest companies combined with the ability of small closely held companies to resist takeover. We also calculated measures of liquidity and gearing to capture financial riskiness and distress, and measures of profitability and performance (including growth of total assets)[8].

2.2 The sample: size and industry characteristics

Previous studies have demonstrated that death rates vary across both company size classes and industry groups. In much of the analysis which follows the death samples are compared with their broad industry groups. This excludes industry as an explanation of death in itself, but enables us to examine why some firms in an industry die whilst others continue. Similarly, some of the subsequent analysis involves matching the death

samples with companies of similar size; and this removes factors relating to company size as a cause of death. Whilst there are good reasons for this matching process, it is interesting to observe the pattern of company death across size classes and industry groupings. Table 1 shows our sample categorised by size and 6 broad groupings consisting of aggregations across several two digit industries.

Looking first at the effect of firm size on death we find contrasting pictures for acquisition and failure death. The proportion of companies which were acquired is much greater in the larger size classes, but with some tendency to tail off in the largest size classes. On the other hand failure is more prevalent amongst the smaller size classes and very much lower in the largest size class. The overall death rate also declines markedly with company size.

There is also a wide variation in death rate across industry groupings, with a much lower level in manufacturing than amongst distribution or property companies. The question of whether these industry differences reflect the size distributions found within each industry sample (or vice versa) was examined for all deaths, acquisition deaths and failure deaths using a chi-squared test. This analysis demonstrates that the observed differences in death rates across the industries is not significantly different from that to be expected given the size distributions within each industry. On the other hand the differences in total death rates and in each death type across the size classes cannot be accounted for by differing industry representations within the size classes. These differences are explored further in the following sections using both univariate and multivariate analyses.

3. Univariate Results

The univariate analysis was carried out to identify differences in the means and medians for the variables across a number of samples. The variables were each measured for the year prior to failure or acquisition as well as for the change in value from two years to one year before death. We have shown above that the failed and acquired firms are unequally distributed across size groups and industries. This must be taken into account in

analyzing the differences between dying and surviving firms and this has been handled in two ways in the analysis which follows. First, to allow for industry effects each of the failed and acquired firms was randomly matched with a surviving firm drawn from the same two-digit industry group. However this still leaves a gap in our understanding for those variables where we have reason to believe that they are correlated with firm size. In order to resolve this a second matched sample was drawn which matched each of our sample of failed and acquired firms with a surviving firm of the same size and industry. Both sets of results are discussed below.

The analysis of both sets of matched samples included three comparisons: acquired companies with their matches; failed companies with their matches; and the difference between acquired companies and their matches compared with the difference between failed companies and their matches. Finally, in order to examine whether the death process is different for small companies, separate sets of results are presented for small and large dying firms.

3.1 Large and small companies taken together

The following discussion relates to the univariate results for the matched samples of failed and acquired firms. It makes no distinction between small and large dying firms. The results for the samples matched only by industry are presented in Table 2. This table shows for the whole sample, the results of an analysis of acquired, failed, and acquired versus failed companies. The equivalent findings for the sample matched by both size and industry are shown in Table 3. Each of these tables shows the variables measured for the year before death, but the discussion also draws upon the analysis of changes in these variables from the previous year (which is not reported in the tables).

3.1.1 Size

Matched Only by Industry

The results for one size measure are presented here, but several other size

measures were also used and gave similar results. Although we found above that acquired firms were most commonly found in our middle size classes within the sample, Table 2 shows that they are typically smaller than other firms within their industry. Our previous analysis also demonstrated that failed firms were more likely to be found amongst the smaller size groups and this is borne out by the significance of the differences between failed firms and their matched samples in Table 2. The table also confirms that the failed firms are smaller on average than the acquired firms.

Matched by Size and Industry

The size and industry matched samples in Table 3 show much weaker size differences. This confirms that the matching process has indeed resulted in matched samples very close in size to the samples of acquired and failed firms.

3.1.2. Profitability and Growth

Matched Only by Industry

The profitability measures reported in the tables are the return on total assets measure both after and prior to the deduction of directors' emoluments. Table 2 reveals that the acquired firms are less profitable than their industry matches, but the difference is not statistically significant. It also shows that failed companies are more strikingly, and statistically significantly, below their industry's profitability. This difference between the two groups is confirmed by the results shown in the final two columns of the table. These reveal that the underperformance relative to matched companies in terms of profitability is significantly greater for the failed firms than for the acquired. Furthermore a separate analysis of the acquired firms shows no significant differences from their matches in terms of the change in profitability from two years before to one year before acquisition; whereas the failed firms were significantly worse than their matches in terms of the change in each of the profitability measures other than the return on total assets (which was also worse but not statistically significant).

We also report in this section the findings for growth of total assets and the retention ratio (the ratio of retentions to the sum of retentions and

dividends). In terms of growth in the year prior to death Table 2 shows that the failed firms again perform significantly worse than the acquired firms, but in this case both groups are significantly worse than their matches. In addition the failed firms show a significant deterioration in growth from the previous year when compared to their matches. This is not the case for the acquired sample. On the other hand, whilst the retention ratio for the acquired firms is insignificantly below that of their matches, the failed firms have a significantly higher retention ratio than either their matches or the acquired firms.

Matched by Size and Industry

The purpose of the results presented in Table 3 is to establish whether any of the findings for profitability and growth discussed above reflects the difference in average size between the dying firms and their surviving matches. In this case we find from Table 3 that whilst the findings for growth and the retention ratio do not require any qualification, there are important differences in our results for profitability. In particular, when the acquired sample is matched by size as well as industry, we find them to be significantly less profitable than their matches. But we again find no evidence that the change in profitability from the previous year was any worse for the acquired than these matches. No other qualifications of our findings are required and the failed group remains significantly less profitable than the acquired when each is measured relative to its matched sample.

3.1.3. Liquidity

Matched Only by Industry

Several measures of liquidity were investigated and none of these measures revealed any significant differences between the acquired firms and their matches either in the year before acquisition, or in the change from the previous year. Table 2 does show some differences for the comparison of failed firms with their matches. For example the median is significantly lower for the acid test ratio and the liquid assets ratio and the ratio of current liabilities to total assets is significantly greater in terms of both the mean and the median. For none of these measures was it found that the

liquidity of the failed firms had significantly worsened over the previous year in comparison with their matches. Despite these differences between the failed and the acquired groups and their matches Table 2 shows that the difference between the failed and acquired groups is statistically significant only for the ratio of current liabilities to total assets.

Matched by Size and Industry

When we match our dying firms by both size and industry we again find no notable differences between the acquired and their matches, but the finding of a significantly higher ratio of current liabilities to total assets and lower medians for the liquidity ratio and the acid test ratio amongst the failed firms is supported.

3.1.4. Gearing

Matched Only by Industry

The measures of gearing employed here are the ratios of short-term loans and long-term loans to total assets. Again we find no significant differences between the acquired firms and their matches for these measures. But the failed firms are shown to have higher short-term and lower long-term gearing than their matches and the difference is statistically significant for the former. The differences between acquired and failed firms are not statistically significant. The change in each of these measures from two years before to one year before death was analysed and the only (marginally) significant difference between the dying and surviving firms was a slight increase in long-term gearing by the acquired firms in relation to the other groups.

Matched by Size and Industry

The matching by size reveals some important modifications to the above findings. For example Table 3 shows some evidence that acquired firms also have higher short-term gearing and lower long-term gearing when compared with firms of comparable size in their industries. In the case of failed firms this table confirms our finding above of higher short-term gearing, and further suggests that failed firms have higher gearing than those acquired.

3.2. Small acquired and failed companies

In order to establish whether the death process differs between large and smaller companies in terms of the pre-death characteristics of the dying firms,each of the two matched samples was divided into two groups. The larger firms were taken as those with total assets greater than or equal to £2.5m; and the rest were placed in the small firms group whose results are reported in this section. The discussion follows the same pattern as that for the whole sample of failed and acquired firms.

3.2.1. Size

Matched Only by Industry

Table 4 shows that for the small firm dying sample the size differences from the matches are great when matching is carried out by industry alone. Matched by size and industry Table 5 confirms that good size matches have been achieved within their industries for both acquired and failed firms.

3.2.2. Profitability and Growth

Matched Only by Industry

The profitability measures show insignificant differences between the acquired and their matches which is what was found for the whole sample. There are some differences however. The return on total assets measured prior to the deduction of directors emoluments is notably higher for the acquired than their industry matches. But we again find more marked contrasts when we look at the failed firms. These firms again exhibit lower profitability than their matches and the differences are statistically significant. However, whilst Table 4 confirms the relative underperformance of the failed firms, the result is not statistically significant for this small firm sample.

Table 4 also shows that small acquired and failed firms have lower growth rates and higher retention ratios immediately prior to death when compared with their industry matches; and these differences are more pronounced for the failed firms.

Matched by Size and Industry

It will be recalled that when the whole sample of acquired firms was matched by size as well as industry their profitability was shown to be significantly below their matches. However this is not found when we do the same for the sample of small acquired firms. Table 5 shows them to be not significantly different in terms of profitability from similar sized firms within their industries. The finding above that they were notably more profitable in terms of the return on total assets prior to the deduction of directors emoluments is shown to be a size effect. This lack of discrimination between small acquired and their matches extends to measures of changes in profitability from two years to one year before acquisition. The failed firm sample remains significantly less profitable even when matched by size and industry and this was the case for the full sample. They too show no significant differences in terms of their changes in profitability, but there is some evidence to suggest that the acquired firms were faring relatively better in this respect than the failed firms.

The finding that both groups were slower growing is supported but it is only for the failed firms that the difference from the matches sample is significant. On the other hand the retention ratio of each group is not significantly different from their matches by size as well as industry.

3.2.3. Liquidity

Matched Only by Industry

Table 4 shows few differences in liquidity between acquired and failed firms, or between either and their industry matches. This is slightly different from the results for the full sample for which we found lower liquidity for the failed group when compared with matches by industry alone. However we do find a significantly higher ratio of current liabilities to total assets for both when compared with their industry matches.

Matched by Size and Industry

For the full sample Table 3 revealed that there is little difference in liquidity between the dying and surviving firms when matching is done by size and

industry. This is found to be equally true of our sample of small firms in Table 5 with only the ratio of current liabilities to total assets exhibiting a significant difference for the failed firms.

3.2.4. Gearing

Matched Only by Industry

There is some evidence to suggest that the small failed firms have higher short-term gearing and lower long-term gearing than their industry matches, but the contrast is not as significant as it was for the full sample. The small acquired firms display somewhat lower gearing overall than their industry.

Matched by Size and Industry

For the full sample we found higher short-term gearing for both failed and acquired firms when compared with surviving firms of comparable size. We find this to be the case for small failed firms where the difference is statistically significant. However we find no evidence that small acquired firms have a different level of short-term gearing than firms of comparable size in their industries. The findings for long-term gearing are inconclusive for both groups.

3.3 Large acquired and failed companies

The final set of results relate to larger companies with total assets of £2.5m or more. It is this group of companies which has attracted most attention in previous research. A comparison of our findings for small and large failed and acquired companies will give us some insight into how representative may be the results from large company studies for the small business sector.

3.3.1. Size

Matched Only by Industry

Table 6 shows that whilst our large failed and acquired firms are substantially larger than those in the small firm sample, they are still below

the averages of their industries. However we would not expect substantial differences in the results for the two forms of matching in this case.

Matched by Size and Industry

Table 7 demonstrates that matching our larger acquired and failed samples by size as well as industry has resulted in matched samples of comparable average sizes. It also shows in comparison with Table 5 that the majority of our acquired firms fall in the large firm sample, whilst the majority of our failed firms fall in the small firm sample.

3.3.2. Profitability and Growth

Matched Only by Industry

We again find no significant differences for any measure of profitability between the acquired firms and their industry matches. On the other hand the failed firms again show a significantly worse profitability in the year before death. The differences are more striking than for the small failed firm sample and, unlike that sample, are associated with significantly worse deterioration in profitability from the previous year. Table 6 confirms the significantly worse profitability performance of the failed firms than the acquired firms when both are measured relative to their industry matches.

Table 4 shows no significant differences in the retention ratio between either failed or acquired firms and their industry matches. But the growth performance of both groups is significantly below their industry matches. The failed group has, on average, declined in size and its growth performance relative to the industry matches is significantly worse than that of the acquired firms.

Matched by Size and Industry

The results for the large acquired sample in Table 7 are similar to those for the whole acquired sample. When the matching is carried out by size as well as industry we find a significantly worse profitability performance for the large acquired firms than for surviving firms of comparable size in their industry. Since the average size is not substantially different between

these two matched samples, this result serves to remind us of how vulnerable are studies of this sort to changes in sample selection.

The results for the large failed firms shown in Table 7 simply serve to confirm our findings discussed above. Large failed firms are significantly less profitable than both their industry matches and their acquired counterparts. Unlike the acquired firms, the failed firms show a significant deterioration in profitability from two years before to one year before death. Both acquired firms and failed firms within this large firm sample display significantly slower growth than their size and industry matches. The underperformance is much worse for the large failed firms than the large acquired, but this difference is no longer statistically significant.

3.3.4. Liquidity

Matched Only by Industry

There are few differences in liquidity between the dying firms and their industry matches, particularly for the large acquired firms. The failed firms have somewhat lower liquidity and a higher ratio of current liabilities to total assets than the acquired.

Matched by Size and Industry

Both the full sample and the small firm sample revealed few significant differences between dying and surviving firms in terms of pre-death liquidity when the comparators are matched by both size and industry. Table 7 shows this also to be the case for large acquired firms. However this is not the case for large failed firms which display a higher current liability ratio and lower liquidity than firms of comparable size in the same industries.

3.3.5. Gearing

Matched Only by Industry

The results for gearing are very similar to those for the full sample. The large acquired show no significant differences from their industry matches, whereas the small acquired showed somewhat lower gearing. The large

failed firms have higher short-term gearing than both their industry matches and the large acquired firms.

Matched by Size and Industry

When the dying firms are matched with surviving firms of comparable size within their industry we confirm our findings above for failed firms. Thus our findings in terms of gearing are very similar for large and small failed firms. But we also find significantly higher short-term gearing ratios for the large acquired firms in comparison with their matches. This was not found to be the case for small acquired firms.

4. Multivariate Results

The previous section identified which variables are important univariate discriminators both between the dying and matched surviving firms and between the acquired and failed firms. However inter-correlations between these variables may result in a different classification of the importance of these variables as multivariate discriminators. In order to study this we have used the technique of stepwise multiple discriminant analysis applied to the comparisons for the whole sample of acquired and failed firms against their matches and against each other. The results for matching by industry alone and by both size and industry are each presented in Table 8. Analysis was carried out using the full set of variables, but missing observations for some of the variables led to reduced sample sizes. The results presented here are for a fixed subset of the variables, shown in Table 8, for which there were few missing observations, but the results of the other analyses will be reported where appropriate.

4.1 Acquired firms

Matched Only by Industry

Size and growth are the most important discriminators between the acquired and their industry matches, as they were on a univariate basis. They are very weakly correlated with each other and so it is not surprising that both are selected. However the degree of discrimination achieved, whilst statistically significant, is not very impressive with 60% correctly classified

by the discriminant function. None of the other variables is a good univariate discriminator, but make a contribution to the discriminant function. In the case of profitability this is probably due to its strong positive correlation with growth and suggests that the acquired have a lower than expected growth given their profitability performance relative to their industry. These findings lead to the tentative conclusion that the acquired firms have a lower acid test ratio and a higher ratio of current liabilities than their industry matches. Making use of the full set of variables does not markedly improve the discrimination achieved, but does add the deterioration in profitability from two years to one year before acquisition as another discriminator.

Matched by Size and Industry

It is not surprising to find that the size variable is not a significant discriminator when the matching is carried out by both size and industry. However it is worth noting that there is no change in the discrimination achieved with 61% correctly classified by the discriminant function. On a univariate basis we found the acquired companies to have lower growth, profitability and liquidity (but not significantly in this latter case). We also found a somewhat higher ratio of short-term loans to total assets, but a lower ratio of long-term loans to total assets for acquired when compared with these matched companies. The univariate findings are broadly supported by the multivariate analysis, but there are some surprises. Profitability does not contribute significantly to discrimination despite the lower average profitability of acquired firms. This is possibly due to its strong positive inter-correlation with growth and its negative correlation with the ratio of short-term loans to total assets. On the other hand the ratio of current liabilities to total assets becomes an important discriminator in a multivariate context despite its importance as a univariate discriminator. Within the whole sample there is, as we would expect, a strong positive correlation between the short-term loans and current liabilities both measured as a ratio of total assets. However we found that our acquired sample were above average in the former measure, but not different from their matches in terms of the latter. This explains both the selection of the ratio of current liabilities to total assets and why its sign is opposite to that for the ratio of short-term loans to total assets in the discriminant function.

4.2 Failed firms

Matched Only by Industry

The univariate analysis revealed greater differences between failed firms and their matches than those found for acquired firms. The failed firms were found to be smaller, slower growing and less profitable and to have higher ratios of short-term liabilities to total assets than their matched firms. Most of these variables are selected in the discriminant function which is highly significant (with the size variable dominant) and achieves a correct classification of 79% of the sample. The exclusion of growth from the discriminant function is surprising, but may be accounted for by its positive inter-correlation with profitability. In a similar way the exclusion of the ratio of short-term loans to total assets may be due to its strong negative correlation with profitability.

Matched by Size and Industry

The univariate results showed failed firms to have lower profitability, growth and liquidity and higher borrowing and current liabilities than average when matched by both size and industry. These variables form the basis of the discriminant function and the degree of discrimination is highly significant. The loss of size as a discriminating variable reduces the correct classification of the sample to 66%. The loss of the net liquid assets ratio from the discriminant function is probably a consequence of its strong positive correlation with the acid test ratio and its strong negative correlation with the ratio of current liabilities to total assets both of which are included in the discriminant function.

4.3 Acquired vs failed firms

Matched Only by Industry

The third set of univariate tests compared acquired with failed firms, both measured as the difference from their matched firm. This comparison revealed that failed are significantly smaller, less profitable and slower growing than the acquired firms on average. Failed firms also have higher ratios of short-term loans and current liabilities to total assets, but these differences were not generally statistically significant. The multivariate

findings support these results with size and profitability dominating the discriminant function. The results suggest significant differences between acquired and failed firms and 71% of the sample is correctly classified by the discriminant function. The discriminant function also captures growth and the ratio of current liabilities to total assets as significant discriminators. The sign for the growth variable is probably due to its strong positive correlation with profitability. These multivariate results compare variables for the death samples measured relative to the companies matched by industry. When no such adjustment was carried out and the values of the variables for acquired, and failed companies were entered unadjusted into the discriminant function, the percentage correctly classified rose to 78%, with size, growth and profitability dominant.

Matched by Size and Industry

The matching by size was less successful for the failed firms than for acquired firms and this accounts for the retention of the size variable as a weak discriminator. In addition the univariate findings showed the failed firms to have lower profitability and higher borrowing than the acquired firms when each was compared with their size and industry matches. Whilst the univariate analysis revealed differences in the liquidity measures they were not generally significant. However it is these measures which dominate the discriminant function in the multivariate analysis. The acid test ratio and the ratio of current liabilities to total assets, both of which are lower for acquired than for failed firms despite their negative correlation within the whole sample, are the most important discriminators. Size and gearing appear in the discriminant function in support of the univariate results. On the other hand the profitability variable is not selected and it is not easy to offer any explanation for this in terms of the inter-correlations between the variables within the sample.

5. Post-Merger Success

From our full sample it was possible to select a group of companies which continued to produce financial reports as separate entities following their acquisition. Our requirements were that we had accounting information for the acquired company in the two years prior to acquisition and for at

least three years after acquisition (data for the year of acquisition was excluded). The accounts of such companies were carefully checked to see whether they appeared to exhibit any significant changes in accounting treatment. This approach yielded a sample of forty companies which were then analysed.

This sample was first checked against the whole sample of acquisition deaths to check for selection bias. We found that the reduced sample was representative of the full sample in terms of both size and industry. The sample is further partitioned in two ways. First it is separated into small and large acquired companies (divided by total assets greater or less than £1m). Second, the sample was partitioned by the success of the acquisition. Success was measured by the change in industry normalised profitability from two years before to three years after the acquisition. If this change was positive the acquired firm was put in the 'merger success' sample.

The impact of acquisition on relative profitability is examined in Table 9. The first row concerns the whole sample and reveals that whilst relative profitability was above industry average prior to acquisition, it is slightly below average post-acquisition. this finding of an insignificant deterioration of profitability performance has been found in most large company merger studies. However, a more encouraging picture emerges when we look five years beyond the acquisition event. Lack of data restricted this sample to twenty-three companies and the results for these are shown in the second row of Table 9. They show a similar profitability performance in the first three years post-acquisition relative to their industries. However, since this group had a better pre-acquisition profitability than the whole sample, the decline in profitability over this period is more marked for the 5-year sample. Most interestingly there is a substantial improvement in relative profitability in the fourth and fifth years post-acquisition. This finding is supported when we partition the sample. Small acquired companies show a much greater deterioration in profitability in the three and five years post-acquisition than do larger acquired companies. But in both cases the relative profitability performance improves towards the end of the five year period.

Finally the bottom rows of Table 9 show a comparison of the successful and unsuccessful groups. The most striking finding is that the successful group were those companies which brought their profitability from below industry average in the two years prior to acquisition up to industry average in the three years after. Therefore acquisition appears to have the best chance of improving relative profitability when the acquired company was performing poorly relative to its industry prior to acquisition. Interestingly, this corresponds with our survey (SBRC (1992)) finding that the least profitable firms were most likely to view the prospect of being acquired with an open or positive mind. The unsuccessful group is dominated by companies who were doing well relative to their industries before being acquired and whose performance post-acquisition is dismal. In this case we again observe an improvement in relative profitability five years after acquisition in comparison with the first three years post-acquisition.

Further insight into the causes of post-merger success or failure can be gained from the case study analysis of ten of the forty sample companies. Each of these acquired companies was in the small company sample, four were classified as successes and the remaining six as failures. A full description of these case studies is given in Cosh and Hughes (1993b), but a brief summary will illustrate the difficulties faced when assessing merger success.

The four success stories had all been performing poorly before acquisition and improved substantially in the first three post-merger years. However, in two cases this improvement was short-lived and these distress sales did not prevent eventual closure. In the other two cases the improved performance was sustained.

Two of the other case study companies were both performing poorly before being acquired and did not improve post-merger. In one case there was a significant recovery in later years the company by then having been sold on twice. In the other case, despite significant investment by the acquirer, the result was a partial closure of the business and the absorption of the remaining part. Both of these were distress sales and the companies faced immediate closure as the alternative to acquisition. In the light of this it is

perhaps too harsh to judge them as complete failures, although the result of acquisition was hardly very civilized.

The remaining four companies were performing well in terms of profitability before the acquisition and deteriorated post-merger. However, two of these were experiencing difficulties even before the acquisition which had not yet had their full impact on profitability. In both cases profitability was improving in later years after a slump in the first few post-merger years. In view of this insight it may be better to regard these as success stories. The other two in this group were clearly unsuccessful acquisitions resulting from strategic errors by the acquirers. In one case the acquisition resulted in closure and in the other the company was sold on twice.

For these ten companies neither the choice of target, nor the merger outcome, appears to differ between large and small acquirers. Similarly, the continuation, or removal, of the original directors does not appear to be related either to prior performance, or merger success.

In summary of this section we can compare our findings with those of Ravenscraft and Scherer (1987). Their sample of acquired firms differed from ours in that their average profitability was above industry norms. On the other hand, they too found that smaller targets were more profitable than larger targets. In terms of the effects of acquisition on profitability they separated their sample into those which were subsequently divested and those which survived. The former group were abject failures. The targets were often acquired at, or near, their profitability peak and declined substantially thereafter. In this way they may be compared with our merger failure group which showed a similar pattern. However, it is the survivors group with which our findings should be compared. For this group Ravenscraft and Scherer found a profitability performance post-acquisition in line with industry norms. This represented a significant decline from their pre-acquisition levels; and, as with our study, they found the decline in profitability to be greater for smaller firms. They attribute part of the decline to new and complex organisational structures being imposed on the targets and to loss of motivation. 'Although some of the decline is

attributable to the unsustainable high level of pre-merger profits, an appreciable fraction appears to be a scaled-down manifestation of the control loss problems that led to sell-off in more extreme cases'. (Ravenscraft and Scherer (1987) p192-3). Our findings are in accordance with this conclusion, but we keep an open mind at this stage about the relative importance of the acquisition event itself or, alternatively, some form of Galtonian regression effect in which high profits converge to the mean (Cosh, Hughes, Lee and Singh (1989)).

6. Summary of Results

We have sought to answer the following questions:

(a) What factors distinguish corporate failure?
(b) What factors distinguish acquisition?
(c) What factors distinguish acquisition from failure?
(d) What is the subsequent outcome of acquisitions?
(e) Are any of the above answers different for large and small companies?

We can summarise our findings as follows:

(1) Acquired and failed companies were found to be smaller than the average in this sample. However there was some evidence to suggest that acquisition is more likely amongst the middle size ranges than either smaller, or larger, size classes.
(2) The differential incidence of acquisition and failure death in the different industry groups was shown to be associated with the size distribution of firms in those industries.
(3) In general it was found that acquired firms were less distinguishable from their matched counterparts than were failed firms.
(4) Both acquired and failed firms showed lower profitability and growth than their industry matches. Failed firms were worse in both respects than the acquired firms on average and also showed significant deterioration in both measures from the previous year. When the death samples were divided into larger and small firms, these findings were supported for both groups. However the underperformance was much more marked for larger firms which were acquired or failed than for smaller firms.

(5) Acquired firms showed no significant differences from their matches in terms of liquidity when matching was on the basis of industry alone or by size and industry.

(6) Failed firms exhibited lower liquidity and higher current liability ratios than their matched sample, but the differences were less pronounced when matched by size as well as industry. When the failed firm sample was divided into larger and smaller firms, the lower liquidity of the failed firms was found to be particularly pronounced for the larger failed firms.

(7) Acquired firms were found to have somewhat higher short-term gearing and lower long-term gearing than their matches. This higher short-term gearing was found to result from the higher gearing of larger firms within the acquired sample. On the other hand failed firms showed higher short-term and long-term gearing on average than either their matches or acquired sample.

(8) Multivariate discriminant analysis supports most of the univariate differences between the acquired and their matched firms. Whilst size is an important discriminator between acquired and non-acquired firms, the degree of discrimination is not much reduced when the acquired sample is matched by both size and industry. On the other hand there is a considerable overlap between acquired and non-acquired firms with the discriminant functions achieving a correct classification for only slightly greater than 60% of the sample. The key discriminating variables other than size are the lower growth, higher short-term borrowing and higher ratio of current liabilities to total assets of acquired firms.

(9) The discrimination achieved for failed firms is much greater than that for acquired firms. When size is allowed to play a role the classification is 79% correct, but this falls to 66% when the failed sample is matched by both size and industry. The multivariate analysis lends strong support to the univariate findings summarised above.

(10) Analysis of post-merger profitability performance reveals an insignificant decline in relative profitability. There is some evidence for an improvement in later years for those which survived.

(11) The relationship between pre-merger profitability and post-merger success amongst the forty company sample can be summarised as follows:

	POST-MERGER	
PRE-MERGER	SUCCESS	FAILURE
HIGH	2	15
LOW	16	7

This measure of post-merger success is therefore strongly associated with performance turnaround. Furthermore, on this evidence such a turnround is more likely than not.

(12) Our case study analysis of ten of the smaller acquired companies revealed that simple interpretation of merger success or failure is not possible. In more than half of our cases the company was either closed down, or sold on, within a few years of takeover. This was true also for the merger 'success' cases.

Finally, we turn to our interpretation of these findings for the selection process. It could be argued that poor profitability and growth may reflect a weak market position and poor product range. In this case it would follow that it is less easily rectified by acquisition than a financing problem. This would support our finding that growth and profitability performance is worse for failed companies than those acquired. The higher likelihood of failure than acquisition amongst such companies in our small company sample is explicable in two ways. First, the narrower product range of small companies makes it less possible to retrieve a poor market position. Second, a potential explanation for the underperformance of larger companies is the agency problem for which acquisition provides a potential solution. In addition, the finding that failing large firms exhibit worse relative performance than failing small firms and that the matched small surviving firms were typically more profitable than the matched larger surviving firms may reflect the greater access to sources of finance for large firms, and their ability to remain in business with worse financial records for longer periods before finally succumbing. This would also be consistent with long purse theories of market power based on capital market imperfection.

It is not surprising to find insignificant performance differences between small acquired companies and their non-acquired counterparts. Acquisitions amongst this group, where the shares are generally closely-held, occur for a variety of reasons: retirement; exit and capital gains; access to funding etc. Therefore we would not expect a significant difference in pre-merger performance in terms of any of our variables.

On the other hand acquisition of large companies implies some degree of vulnerability. Thus we might expect to find, in addition to their worse performance, difficult liquidity and gearing positions. Whilst there is little evidence for significantly worse liquidity for large acquired companies, their short-term gearing is significantly higher on average.

The financial position of failed companies is more revealing than that found for acquired companies. Here we do find lower liquidity and higher current liabilities and short-term gearing than their matched companies.

Our analysis of the outcome of acquisition suggests greater success amongst the large acquired sample, but the average outcome is a modest decline in performance overall. The average outcomes mask a wide variety of individual performances but could be characterised in the following Galtonian way. Large acquired firms are more likely to be underperforming than small acquired firms, and therefore have greater scope to benefit from returning to mean profitability, and greater probability of doing so given a general tendency of performance regression to the mean.

Notes

1. This is the body of work concerned with the market for corporate control as a selection mechanism (Manne (1965) Singh (1975) Auerbach (1988) Hughes (1993)).

2. There are of course intermediate positions, the capacity of an acquired firm may be subsequently rationalized or closed down, and the assets of a failed firm may be sold off to other businesses by liquidators or receivers, or operated by administrators. The distinction drawn between capacity maintenance and capacity closure is however the one most commonly found in the literature (e.g. Pastena and Ruland (1986)).

3. Since the 1930's it has been possible in the U.S.A. for an acquiring firm to offer as a defence in justification of merger that the acquired company's assets would otherwise have left the industry through failure. An acquisition would therefore maintain industry capacity and output. If it can be shown to be the least anti-competitive way of preserving this capacity then a merger may be allowed to proceed (see eg Carlton and Perloff (1989))

4. This aspect of the literature has an echo in more recent theoretical discussions of the link between capital market imperfections and the power of firms with a 'long purse' to pursue predatory pricing leading either to exit of the financially weaker firm or its acquisition by the predator after a period of price competition has 'softened them up' (see for example Tirole (1989) chapter 8 and 9 esp pp 378ft for a recent survey). These more recent interpretations place less emphasis upon the 'civilised' aspect of acquisition and more upon the predatory aspect.

5. For an alternative more optimistic interpretation of post acquisition performance based on plant productivity changes see Lichtenberg and Siegel (1987).

6. For a similar approach using larger companies see Ashcroft et al. (1987).

7. For a full discussion of this sample see Cosh and Hughes (1993a).

8. In view of the emphasis on top level management as a factor in smaller company failure we also calculated as proxy for 'management quality' the total number of directors per company, and the average and total directors emoluments. The results of the analysis of this set of variables is not reported here for reasons of space. For a discussion of this aspect of acquisition see Cosh and Hughes (1994).

TABLES

Table 1 **Analysis of Continuing, Acquired and Failed Firms - DTI Sample 1977 - 1982 Classified by Size of Total Assets in 1977**

		IND1 No	IND1 %	IND2 No	IND2 %	IND3 No	IND3 %	IND4 No	IND4 %	IND5 No	IND5 %	IND6 No	IND6 %	ALL No	ALL %
	Companies in 1977	17	100.0	33	100.0	43	100.0	26	100.0	35	100.0	18	100.0	172	100.0
SIZE 1	Acquired	0	0.0	1	3.0	2	4.7	0	0.0	2	5.7	1	5.6	6	3.5
	Failed	4	23.5	9	27.3	7	16.3	8	30.8	5	14.3	2	11.1	35	20.3
	Survived to 1982	13	76.5	23	69.7	34	79.1	18	69.2	28	80.0	15	83.3	131	76.2
	Companies in 1977	58	100.0	67	100.0	93	100.0	46	100.0	71	100.0	30	100.0	365	100.0
SIZE 2	Acquired	6	10.3	4	6.0	5	5.4	5	10.9	2	2.8	2	6.7	24	6.6
	Failed	15	25.9	16	23.9	17	18.3	8	17.4	16	22.5	9	30.0	81	22.2
	Survived to 1982	37	63.8	47	70.1	71	76.3	33	71.7	53	74.6	19	63.3	260	71.2
	Companies in 1977	33	100.0	34	100.0	39	100.0	12	100.0	24	100.0	5	100.0	147	100.0
SIZE 3	Acquired	0	0.0	2	5.9	2	5.1	1	8.3	0	0.0	0	0.0	5	3.4
	Failed	4	12.1	8	23.5	9	23.1	0	0.0	5	20.8	2	40.0	28	19.0
	Survived to 1982	29	87.9	24	70.6	28	71.8	11	91.7	19	79.2	3	60.0	114	77.6
	Companies in 1977	47	100.0	108	100.0	20	100.0	20	100.0	25	100.0	9	100.0	229	100.0
SIZE 4	Acquired	6	12.8	16	14.8	4	20.0	6	30.0	2	8.0	3	33.3	37	16.2
	Failed	1	2.1	7	6.5	1	5.0	0	0.0	5	20.0	1	11.1	15	6.6
	Survived to 1982	40	85.1	85	78.7	15	75.0	14	70.0	18	72.0	5	55.6	177	77.3
	Companies in 1977	90	100.0	160	100.0	49	100.0	37	100.0	48	100.0	26	100.0	410	100.0
SIZE 5	Acquired	10	11.1	15	9.4	9	18.4	4	10.8	3	6.3	3	11.5	44	10.7
	Failed	5	5.6	7	4.4	1	2.0	0	0.0	5	10.4	1	3.8	19	4.6
	Survived to 1982	75	83.3	138	86.3	39	79.6	33	89.2	40	83.3	22	84.6	347	84.6
	Companies in 1977	80	100.0	92	100.0	41	100.0	22	100.0	40	100.0	22	100.0	297	100.0
SIZE 6	Acquired	8	10.0	9	9.8	3	7.3	1	4.5	1	2.5	4	18.2	26	8.8
	Failed	2	2.5	0	0.0	2	4.9	0	0.0	0	0.0	0	0.0	4	1.3
	Survived to 1982	70	87.5	83	90.2	36	87.8	21	95.5	39	97.5	18	81.8	267	89.9
	Companies in 1977	325	100.0	494	100.0	285	100.0	163	100.0	243	100.0	110	100.0	1620	100.0
ALL	Acquired	30	9.2	47	9.5	25	8.8	17	10.4	10	4.1	13	11.8	142	8.8
SIZES	Failed	31	9.5	47	9.5	37	13.0	16	9.8	36	14.8	15	13.6	182	11.2
	Survived to 1982	264	81.2	400	81.0	223	78.2	130	79.8	197	81.1	82	74.5	1296	80.0

Range of Total Assets (£,000) in 1977

SIZE 1 -	0 -	99
SIZE 2 -	100 -	499
SIZE 3 -	500 -	2499
SIZE 4 -	2500 -	12499
SIZE 5 -	12500 -	62499
SIZE 6 -	62500 -	

IND1	Engineering and Metal Goods
IND2	Other Manufacturing
IND3	Distribution
IND4	Business and Other Services
IND5	Construction, Transport & Communication
IND6	Property

Table 2 **COMPARISON OF WHOLE SAMPLE OF ACQUIRED AND FAILED COMPANIES WITH THEIR MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO ACQUISITION**

(Companies matched only by industry)

				ALL COMPANIES					
Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	142	182	9.28*	9.96	6.37*	9.65	-0.68*	-3.28
	Median			9.65	10.45	5.93*	10.11	-0.70*	-3.76
(Curr Assets-Stocks)/	Mean	140	174	0.93	0.97	1.06	0.98	-0.05	0.08
Current Liabilities	Median			0.68+	0.79	0.57*	0.81	-0.12	-0.15
Current Liabilities/	Mean	142	181	0.45	0.41	0.56*	0.43	0.04+0	0.13
Total Assets	Median			0.43	0.42	0.57*	0.44	.01	0.11
Net Liquid Assets/	Mean	142	182	-0.08	-0.06	-0.08	-0.07	-0.01	-0.02
Total Assets	Median			-0.10	-0.06	-0.13*	-0.07	-0.01	-0.04
Short Term Loans/	Mean	141	182	12.47	12.26	16.33*	13.13	0.21	3.20
Total Assets	Median			10.87	9.00	13.12	9.62	0.57	0.75
Long Term Loans/	Mean	142	179	5.11	6.41	3.93	4.61	-1.30	-0.68
Total Assets	Median			1.72	2.84	0.00	1.70	-0.15	-0.57
Net Profit/	Mean	141	168	6.36	7.05	-1.41*	6.49	-0.70*	-7.90
Ave Total Assets	Median			6.60	7.06	0.83*	6.00	-0.42*	-7.09
(Net Prof+Dir Emols)/ Ave	Mean	111	86	8.40	9.30	3.10*	9.31	-0.90*	-6.21
Total Assets	Median			8.80	9.12	4.11	7.26	-0.70	-3.47
Growth of Total Assets	Mean	140	176	1.08*	1.14	1.00*	1.12	-0.06*	-0.13
	Median			1.10	1.13	1.00*	1.11	-0.04*	-0.15
Retentions/	Mean	77	73	74.00	74.42	88.28*	73.05	-0.41*	15.24
(Retentions+Dividends)	Median			74.70	75.42	100.00	77.49	0.00+	18.88

* - average for acquired or failed company is significantly different from matched at 5% level

+ - average for acquired or failed company is significantly different from matched at 10% level

Table 3 **COMPARISON OF WHOLE SAMPLE OF ACQUIRED AND FAILED COMPANIES WITH THEIR MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO ACQUISITION**

(Companies matched by industry and size)

Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	ALL COMPANIES					
				Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	142	182	9.28	9.30	6.37	6.61	-0.02*	-0.24
	Median			9.65	9.83	5.93	6.04	0.01	-0.08
(Curr Assets-Stocks)/ Current Liabilities	Mean	141	171	0.93	1.01	1.06	0.95	-0.09	0.11
	Median			0.68*	0.83	0.57*	0.78	-0.08	-0.14
Current Liabilities/ Total Assets	Mean	142	181	0.45	0.44	0.56*	0.47	0.01	0.09
	Median			0.43	0.42	0.57+	0.45	0.02	0.10
Net Liquid Assets/ Total Assets	Mean	142	182	-0.08	-0.06	-0.08	-0.03	-0.02	-0.05
	Median			-0.10	-0.06	-0.13*	-0.02	-0.04	-0.08
Short Term Loans/ Total Assets	Mean	141	182	12.47	10.60	16.33*	11.43	1.87	4.89
	Median			10.87+	7.35	13.12+	7.74	2.23	4.24
Long Term Loans/ Total Assets	Mean	142	179	5.11+	6.94	3.93	2.79	-1.82*	1.14
	Median			1.72	3.26	0.00	0.00	0.00+	0.00
Net Profit/ Ave Total Assets	Mean	138	165	6.32+	8.73	-1.91*	4.37	-2.41*	-6.28
	Median			6.72	8.75	0.37*	5.16	-2.24*	-5.98
(Net Prof+Dir Emols)/ Ave Total Assets	Mean	109	72	7.72*	10.96	1.24*	12.68	-3.23*	11.44
	Median			8.80	11.00	2.96*	10.11	-3.88	-9.16
Growth of Total Assets	Mean	137	176	1.08*	1.13	1.00*	1.12	-0.05*	-0.13
	Median			1.10	1.12	1.00*	1.09	-0.05	-0.09
Retentions/ (Retentions+Dividends)	Mean	80	62	71.34	75.69	90.33	82.32	-4.35*	8.02
	Median			72.66	77.73	100.00	100.00	0.00	0.00

* - average for acquired or failed company is significantly different from matched at 5% level

+ - average for acquired or failed company is significantly different from matched at 10% level

Table 4 **COMPARISON OF SMALL FAILED AND ACQUIRED COMPANIES WITH THEIR MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO FAILURE**

(Companies matched only by industry)

				SMALL COMPANIES					
Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	107	144	5.71*	9.15	5.48*	9.53	-3.44	-4.04
	Median			5.70*	9.86	5.45*	9.97	-3.61	-4.15
(Curr Assets-Stocks)/ Current Liabilities	Mean	105	137	0.90	0.90	1.14	1.00	0.00	0.14
	Median			0.69	0.73	0.59	0.82	-0.06	-0.15
Current Liabilities/ Total Assets	Mean	107	143	0.55+	0.44	0.57*	0.44	0.12	0.14
	Median			0.52	0.45	0.57+	0.44	0.07	0.11
Net Liquid Assets/ Total Assets	Mean	107	144	-0.07	-0.08	-0.07	-0.07	0.01	-0.01
	Median			-0.11	-0.10	-0.12	-0.07	0.01	-0.01
Short Term Loans/ Total Assets	Mean	107	144	10.16	12.10	14.77	13.03	-1.94	1.74
	Median			8.65	10.52	11.63	8.96	-1.83	0.00
Long Term Loans/ Total Assets	Mean	107	142	1.20*	5.34	3.16	4.45	-4.14	-1.29
	Median			0.00	1.09	0.00	1.57	-1.07	-0.64
Net Profit/ Ave Total Assets	Mean	106	133	6.35	7.93	-0.20*	6.33	-1.59	-6.53
	Median			4.71	8.04	1.26*	5.98	-0.95	-6.13
(Net Prof+Dir Emols)/ Ave Total Assets	Mean	93	55	16.05	11.85	8.26	10.19	4.20	-1.93
	Median			16.92	11.27	8.06	8.59	3.47	-0.87
Growth of Total Assets	Mean	105	138	1.12	1.16	1.00*	1.12	-0.03	-0.11
	Median			1.10	1.17	1.01*	1.11	-0.05	-0.13
Retentions/ (Retentions+Dividends)	Mean	57	65	89.31+	75.86	88.04*	72.55	13.44	15.49
	Median			100.00	75.33	100.00	75.76	22.36	19.15

* - average for failed company is significantly different from matched at 5% level

+ - average for failed company is significantly different from matched at 10% level

Table 5 **COMPARISON OF SMALL FAILED AND ACQUIRED COMPANIES WITH THEIR MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO FAILURE**

(Companies matched by industry and size)

Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	SMALL COMPANIES Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	107	144	5.71	5.75	5.48+	5.72	-0.04	-0.24
	Median			5.70	5.62	5.45	5.62	0.06	-0.07
(Curr Assets-Stocks)/ Current Liabilities	Mean	106	135	0.90	1.02	1.15	0.93	-0.12	0.22
	Median			0.69	0.70	0.59	0.72	0.15	-0.11
Current Liabilities/ Total Assets	Mean	107	143	0.55	0.52	0.57+	0.49	0.03	0.09
	Median			0.52	0.51	0.57	0.46	0.01	0.08
Net Liquid Assets/ Total Assets	Mean	107	144	-0.07	-0.07	-0.07	-0.02	0.00	-0.05
	Median			-0.11	-0.09	-0.12*	-0.02	0.01	-0.06
Short Term Loans/ Total Assets	Mean	107	144	10.16	12.35	14.77*	10.76	-2.19	4.01
	Median			8.65	8.35	11.63	5.84	0.00	0.55
Long Term Loans/ Total Assets	Mean	107	142	1.20	4.79	3.16	1.95	-3.59+	1.21
	Median			0.00	0.00	0.00	0.00	0.00	0.00
Net Profit/ Ave Total Assets	Mean	103	130	6.35	5.27	-0.80*	3.58	1.07	-4.38
	Median			4.71	7.66	1.08	3.99	2.53*	-5.25
(Net Prof+Dir Emols)/ Ave Total Assets	Mean	98	37	15.08	16.73	7.71*	17.34	-1.65	-9.62
	Median			18.16	13.87	7.96+	14.87	-4.35	-7.23
Growth of Total Assets	Mean	102	138	1.12	1.16	1.01*	1.13	-0.03	-0.12
	Median			1.10	1.11	1.01*	1.09	0.00	-0.07
Retentions/ (Retentions+Dividends)	Mean	60	54	84.81	87.32	90.95	82.48	-2.51	8.47
	Median			100.00	100.00	100.00	100.00	0.00	0.00

* - average for failed company is significantly different from matched at 5% level

+ - average for failed company is significantly different from matched at 10% level

Table 6 **COMPARISON OF LARGE ACQUIRED AND FAILED COMPANIES WITH MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO DEATH**

(Companies matched only by industry)

				LARGE COMPANIES					
Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	35	38	10.44	10.22	9.72	10.11	0.22	-0.39
	Median			10.44	10.50	10.30	10.48	-0.21	-0.18
(Curr Assets-Stocks)/	Mean	35	37	0.94	1.00	0.74	0.91	-0.06	-0.17
Current Liabilities	Median			0.68+	0.80	0.48*	0.80	-0.13	-0.15
Current Liabilities/	Mean	35	38	0.42	0.41	0.52+	0.42	0.01	0.09
Total Assets	Median			0.42	0.42	0.52	0.43	0.01	0.12
Net Liquid Assets/	Mean	35	38	-0.08	-0.06	-0.12	-0.07	-0.02	-0.05
Total Assets	Median			-0.09	-0.05	-0.19	-0.06	-0.02	-0.11
Short Term Loans/	Mean	34	38	13.20	12.31	22.22*	13.49	0.89*	8.73
Total Assets	Median			11.85	8.64	19.65	13.32	1.54	7.00
Long Term Loans/	Mean	35	37	6.39	6.76	6.91	5.22	-0.37	1.69
Total Assets	Median			3.35	4.07	1.36	3.80	0.00	-0.28
Net Profit/	Mean	35	35	6.36	6.76	-6.03*	7.10	-0.41*	-13.12
Ave Total Assets	Median			7.21	6.87	-5.48*	6.03	-0.19	-11.05
(Net Prof+Dir Emols)/ Ave	Mean	18	31	6.91	8.80	-6.05*	7.75	-1.89*	-13.80
Total Assets	Median			7.69	8.54	-4.52*	6.70	-1.68	-12.41
Growth of Total Assets	Mean	35	38	1.07*	1.13	0.97*	1.15	-0.06*	-0.18
	Median			1.10	1.12	0.96*	1.08	-0.03	-0.21
Retentions/	Mean	20	8	68.63	73.91	90.28	77.09	-5.28	13.19
(Retentions+Dividends)	Median			67.66	75.90	100.00	81.46	-2.54	14.06

* - average for acquired or failed company is significantly different from matched at 5% level

+ - average for acquired or failed company is significantly different from matched at 10% level

Table 7 **COMPARISON OF LARGE ACQUIRED AND FAILED COMPANIES WITH MATCHED COMPANIES - AVERAGE VALUES FOR YEAR PRIOR TO DEATH**

(Companies matched by industry and size)

Performance Measure	Average Measure	Acquired Sample Size	Failed Sample Size	LARGE COMPANIES Acquired	Matched	Failed	Matched	Acquired minus Matched	Failed minus Matched
Ln (Total Assets)	Mean	35	38	10.44	10.46	9.72	9.96	-0.02*	-0.24
	Median			10.44	10.29	10.30	10.35	0.00	-0.17
(Curr Assets-Stocks)/ Current Liabilities	Mean	35	36	0.94	1.01	0.73	1.02	-0.08	-0.29
	Median			0.68+	0.87	0.48*	0.89	-0.14	-0.38
Current Liabilities/ Total Assets	Mean	35	38	0.42	0.42	0.52+	0.42	0.00+	0.10
	Median			0.42	0.41	0.52	0.41	0.02	0.10
Net Liquid Assets/ Total Assets	Mean	35	38	-0.08	-0.05	-0.12	-0.06	-0.02	-0.06
	Median			-0.09	-0.04	-0.19	-0.07	-0.04	-0.12
Short Term Loans/ Total Assets	Mean	34	38	13.20*	10.04	22.22*	13.98	3.16	8.24
	Median			11.85*	7.28	19.65	10.38	3.58	9.85
Long Term Loans/ Total Assets	Mean	35	37	6.39	7.64	6.91	6.01	-1.25	0.90
	Median			3.35	4.35	1.36	3.97	-0.72	-0.49
Net Profit/ Ave Total Assets	Mean	35	35	6.31*	9.91	-6.03*	7.29	-3.59*	-13.32
	Median			7.35	10.29	-5.48*	7.33	-3.89	-11.44
(Net Prof+Dir Emols)/ Ave Total Assets	Mean	11	35	6.90*	10.31	-5.60*	7.76	-3.41*	-13.36
	Median			8.07	10.49	-4.52*	7.62	-3.85	-11.34
Growth of Total Assets	Mean	35	38	1.07*	1.13	0.97*	1.11	-0.06+	-0.14
	Median			1.10	1.12	0.96*	1.10	-0.05	-0.14
Retentions/ (Retentions+Dividends)	Mean	20	8	66.85	71.81	86.16	81.22	-4.96	4.95
	Median			68.38	75.03	100.00	87.71	-4.99	0.00

* - average for acquired or failed company is significantly different from matched at 5% level

+ - average for acquired or failed company is significantly different from matched at 10% level

Table 8 **MULTIVARIATE DISCRIMINANT ANALYSIS - standardised function coefficients**

	ACQUIRED vs MATCHED		FAILED vs MATCHED		ACQUIRED vs FAILED	
MATCHING BY:	IND ONLY	SIZE & IND	IND ONLY	SIZE & IND	IND ONLY	SIZE & IND
LN (Total Assets)	0.71	-	0.87	-	0.79	-0.53
(Curr Assets-Stocks)/ Current Liabilities	0.31	0.33	-0.11	0.49	-0.21	0.73
Current Liabilities/ Total Assets	-0.35	0.89	-0.45	0.40	-0.30	1.07
Net Liquid Assets/ Total Assets	-	-	-	-	-	-
Short-term Loans/ Total Assets	-	-0.78	-	0.43	-	-
Long-term Loans/ Total Assets	-	0.68	-0.14	0.26	-0.23	0.62
Net Profit/ Ave Total Assets	-0.42	-	0.44	-0.26	0.48	-
Growth of Total Assets	0.78	0.69	-	-0.48	-0.20	-
Change in Cur Liab/ Total Assets	-	-0.50	0.34	-	-	-0.41
Change in Liq Assets/ Total Assets	-0.27	-	-	-	-	-
Change in S-T Loans/ Total Assets	-	-	-0.13	-	-0.15	-
Canonical Correlation	0.25	0.24	0.62	0.33	-0.43	0.29
% Correctly Classified	60.50	61.10	78.90	66.20	70.70	61.30
Total Sample Size	276	270	322	302	293	286

Table 9 **Profitability performance of acquired comapnies - before and after takeover**

Group	Coverage	Sample size	Two years pre-merger	Three years post-merger	Five years post-merger	Three years post-two years pre-merger	Five years post-two years pre-merger
Whole sample	All	40	0.00	-0.05	-	-0.05	-
	5 year	23	0.09	-0.06	-0.01	-0.14*	-0.10+
Small sample	All	15	0.10	-0.05	-	-0.15+	-
	5 year	9	0.22	-0.06	0.01	-0.28+	-0.21
Large sample	All	25	-0.06	-0.05	-	0.01	-
	5 year	14	0.00	-0.06	-0.03	-0.05	-0.03
Merger success	All	18	-0.16*	0.00	-	0.16*	-
	5 year	8	-0.11*	-0.01	-0.04	0.09	0.06
Merger failure	All	22	0.13+	-0.09	-	-0.22*	-
	5 year	15	0.19+	-0.08	0.00	-0.27*	-0.18*

Notes: Mean values for profitability measured relative to the industry median. Profitability is measured by the ratio of net income to net assets.

* indicates significance at the 5% level
+ indicates significance at the 10% level

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