

# Explaining Corporate Restructuring: An Industry Analysis

R. Powell\* and A. Yawson

School of Banking and Finance, the UNSW, Sydney, Australia  
School of Management and Economics, Queen's University Belfast, N. Ireland

FIRST DRAFT

## **Abstract**

This paper examines corporate restructuring at the industry level for a sample of UK firms over the period 1986-1995. Consistent with USA research, takeovers in the UK cluster both across industries and over time. Divestitures, on the other hand, are fairly evenly distributed across industries, but like takeovers also seem to cluster across time. The paper tests the hypothesis that broad economic and industry-specific shocks were significant determinants of takeovers and divestitures over the period 1986-95. The results provide some evidence in support of broad shocks and several industry-specific factors, such as deregulation, foreign competition and industry concentration. However, certain shocks (e.g., deregulation and foreign competition) appear to impact on the rate of takeovers and divestitures differently. Furthermore, when the sample is partitioned into pools (1980s and 1990s), only deregulation is found to be significant in explaining takeover activity for the 1990s period.

*JEL classification:* G14, G34

*Keywords:* Corporate restructuring; Takeovers; Divestitures; Industry shocks; Deregulation

**Address for correspondence:** Ronan Powell, School of Banking and Finance, the UNSW, Sydney 2052, Australia. Tel.: +61-2-9385-4925; fax: +61-2-9385-6347. E-mail address: r.powell@unsw.edu.au

## 1. Introduction

The last two decades have witnessed a dramatic increase in various forms of corporate restructuring, particularly in the economies of the USA and the UK. Takeovers, divestitures, management buyouts (MBOs), going private transactions and bankruptcies have all played a significant role in restructuring firms during the economic downturn of the early 1980s to the boom period of the mid-1980s and 1990s. A plethora of papers have examined these activities at the firm level, motivated from different perspectives. For example, several studies have investigated takeovers (see, e.g., Jensen and Ruback, 1983; Healy, Palepu and Ruback, 1992) and divestitures (see, e.g., John and Ofek, 1995; Hanson and Song, 2000) from a wealth, or performance related perspective. Others have developed models from the perspective of explaining the likelihood of takeover (Palepu, 1986) or bankruptcy for a firm (Ohlson, 1980; Zimjewski, 1984). The findings of these studies have gone some way to helping us understand the underlying determinants of corporate restructuring. From takeover and bankruptcy models, we know that certain financial characteristics seem to be important in explaining a firm's takeover or bankruptcy likelihood. For example, prior performance, firm size and free cash flow seem to be important characteristics that determine a firm's takeover likelihood.<sup>1</sup>

While we know some of the factors that are important in explaining corporate restructuring at the firm level, little is known about corporate restructuring at the industry level. This is surprising, since it is widely known that corporate restructuring activity, in particular takeovers, tend to occur in waves and cluster in certain industries. In the USA, research by Mitchell and Mulherin (1996) and Mulherin and Boone (2000) have pointed to broad economic shocks as a significant factor in explaining takeovers and divestitures at the industry level. These shocks could take the form of a change in the level of interest and exchange rates and other factors such as the general investment and regulatory climate. Industries can also be affected by specific shocks, in terms of deregulation, technology, foreign competition and energy price volatility. When these shocks occur, firms need to respond quickly in order to ensure survival. Since corporate

restructuring, operationalized through takeovers and divestitures is likely to be a lower cost and relatively quick method of restructuring a firm, these activities should be more visible in industries that are sensitive to shocks. For example, the deregulation of Telecommunications, Electricity, Water and Transport industries in the UK during the 1980s and 1990s led to significant restructuring in the form of takeovers and divestitures.

In this paper, we test the hypothesis that broad economic and industry-specific shocks were significant factors in determining the level of corporate restructuring in the UK over the period 1986-95. Our paper extends the work of Mitchell and Mulherin (1996) in several ways. First, we use a broader definition of corporate restructuring to include takeovers (successful and unsuccessful) and divestitures.<sup>2</sup> This allows us to examine whether different forms of corporate restructuring at the industry level are impacted differently by broad economic and specific industry shocks. Second, our dataset covers both the boom period of the 1980s and the downturn of the early 1990s. By examining both time periods our study allows the testing of whether different forms of restructuring played a key role in restructuring industries during the different economic climates of the 1980s and early 1990s. For example, whilst takeovers may have played a significant role in the restructuring of industries during the economic boom period of the mid-1980s, other forms of restructuring, such as divestitures may have played a significant role in restructuring industries during the downturn of the late 1980s and early 1990s. Third, we use a UK dataset, which as far as we are aware, little or no substantive research has been conducted using UK data. This is important because compared to the USA, there is evidence to suggest that UK antitrust laws are more lenient, which may have a positive impact on the level of corporate restructuring.<sup>3</sup> Furthermore, our period of study is one of interest to policy makers since it has seen an aggressive privatization and deregulation policy implemented by the Conservative Government. The impact of both policies on corporate restructuring is therefore of some interest.

Our findings are broadly consistent with the USA evidence in that there is significant industry clustering of takeover and divestiture activity, which can be partly explained by broad

economic and industry-specific shocks. In terms of industry-specific shocks, we find some evidence for deregulation, foreign competition and industry concentration. Also, shocks appear to impact on the rate of takeovers and divestitures differently. For example, while broad economic shocks and deregulation have a positive impact on the level of takeovers, they have a negative impact on the level of divestitures. This makes some sense from a market power perspective since after particular shocks (e.g., deregulation and foreign competition) firms are motivated to maintain or increase their market share, particularly in the face of increased competition. In such circumstances, you should find more takeovers and fewer divestitures. Furthermore, when the sample is partitioned into pools (1980s and 1990s), only deregulation is found to a significant determinant in the level of takeover activity for the 1990s period.

The rest of the paper is organized as follows. Section 2 explains the procedures followed in constructing the sample. Section 3 presents some preliminary results for the level of corporate restructuring across each industry over the sample period. Section 4 describes the model development and discusses the choice of variables to proxy both broad and industry-specific shocks. Section 5 presents some descriptive statistics and the results of the estimated Tobit regressions. Section 6 concludes with a discussion and summary of the main results.

## **2. Sample construction**

This study is based on UK firms listed on the London Stock Exchange (hereafter, LSE) for the period 1986-1995 that have financial data stored on Datastream. Since Datastream removes all ‘dead’ firms from its lists, the constituents of industries at the time of downloading the data would not be representative of the ‘true’ constituents at the beginning of the sample period. So, for example, the list of firms in the Chemicals industry for 1985, extracted, say, in 1999, would include only firms that survived the period 1985-99. Any firms that died between these dates would be removed from the industry list by Datastream and placed in a ‘dead’ companies list. Naturally, this

would inflict a serious survivorship bias on any sample constructed solely from the current Datastream industry lists.

Insert Table 1 here

In order to avoid this bias, we reconstructed the ‘true’ population as at 31 December 1985 using the official stock exchange list, the alternative investment market list (i.e., small capitalization list) and the dead companies list. In order to calculate our proxies for broad economic shocks, we require each firm to have at least 3-years prior data stored on Datastream. 1462 firms were identified and classified into their representative industries using the classification system employed by Datastream (level 6 classification). In all, 1073 firms representing 42-industries met the data requirements. Table 1 shows the distribution of the sample by industry and market value. The firms in the sample have a total market value of £151 billion as at the year-end 1985 and are distributed over 42 industries. The mean (median) number of firms and market values across industries is 26 (22) and £3602 (£1968) million with standard deviations of 17 and £4266 respectively.

In terms of the number of firms in each industry, General Engineering has the highest representation with 107 firms (10% of the sample), whilst the Pharmaceuticals industry has only 7 firms making up 0.70% of the sample. By market value, Oil and Gas is the largest with £20,700 (14% of the sample) while Engineering Fabricators has the lowest market value of £173 million accounting for only 0.11% of the total market value. The descriptive statistics indicate skewness in the distribution and value of sample firms across industries as at the end of 1985.

The firms in each industry are followed from 1 January 1986 to 31 December 1995 in order to identify the major restructuring choices affecting them. The information on the restructuring choices made by firms is compiled from *Acquisitions Monthly*, published by Thompson Financial

Services for each year. Table 2 reports the frequency of restructuring activities pursued by sample firms.<sup>4</sup>

Insert Table 2 here

Table 2 shows that 469 firms (44% of the sample) engaged in divestitures over the 10-year period. This contrasts sharply with the 21% divestitures reported by Mulherin and Boone (2000). Apart from institutional differences, this significant difference may have arisen from what constitutes a divestiture in both studies. For example, Mulherin and Boone (2000) identify a sale of assets as a divestiture when it has a value of US\$100 million or represents at least 5% of the equity value of the divesting firm. We define a divestiture as the sale of a subsidiary to a third party, which may also include management. We do not place any value restriction, hence our definition is much broader and is likely to cover more transactions than that of Mulherin and Boone (2000). We also identify 378 (35% of the sample) takeovers (successful and unsuccessful). This number is higher than Mulherin and Boone (2000) who report 30% successful takeovers for the period 1990-1999, but is lower than the 45% reported by Mitchell and Mulherin (1996). As expected, firms restructuring through divestitures are, on average, larger than firms targeted for takeover.

### **3. Industry patterns in takeovers and divestitures**

Following from Mitchell and Mulherin (1996) and Mulherin and Boone (2000), we analyze whether there are any differences in takeovers and divestitures across industries over the period 1986-1995. If we find industry differences, there will be sufficient grounds for investigating further the causes of these industry variations. Table 3 reports equally weighted (Panel A) and value weighted (Panel B) proportions for takeovers and divestitures over the sample period.

Insert Table 3 here

The mean (median) takeover (successful and unsuccessful) rate across industries is 32% (33%). There are, however, notable differences in the rate of takeovers across industries. For example, approximately 63% of all firms in the Packaging and Advanced Chemicals industries were acquired whereas only 6% of firms in the Retailers, Multi-Department industry were acquired over the period. Divestitures, on the other hand, are fairly evenly distributed across all industries. The results using value weighed averages (Panel B) are broadly consistent, although there seems to be higher variation across industries given the higher standard deviation for both takeovers and divestitures. To test whether the variation in the rates of restructuring activity is statistically significant, we estimate the Pearson  $\chi^2$ , which tests the null hypothesis that the actual takeover or divestiture rate in each industry equals its expected rate.<sup>5</sup> The value of the statistic for all takeovers is 78.33 ( $df = 41$ ), significant at the 1% level, indicating a rejection of the null hypothesis. As expected, the variation in the rate of divestitures across industries is not statistically significant with a Pearson  $\chi^2$  statistic of only 40.41 ( $df = 41$ ).<sup>6</sup>

### *3.1 Do takeovers and divestitures cluster over time?*

As a natural extension of the previous section, we examine whether takeovers and divestitures cluster across certain time periods. This is of some interest since our sample comprises two very different time periods in terms of economic climate and restructuring activity.

Insert Table 4 here

Table 4 reports the number of ‘all takeovers’ (Panel A), and ‘successful takeovers’ (Panel B) by industry across the sample period. We have sorted the data in terms of the maximum clustering percentage reported in an adjacent 2-year period within the 10-year sample period. The evidence suggests that takeover bids are clustered in specific time periods. For example, all 6 takeovers in

the Media Agencies industry occur within a 2-year period. Similar findings exist for Leisure Facilities and Building Materials. It is clear that the 1986-89 period accounts for a high proportion of total takeover activity across industries. Infact, the average 2-year cluster of 49% suggests that about half of all takeovers within an industry occurred within a 2-year period, or stated differently, within one fifth of the sample period. Also of note is the clustering across industries for the full sample, which at 38% (representing the 1986-87 period) is significantly lower than that reported for individual industries. Similar results hold for successful takeovers (see Panel B).

Table 5 presents the results for divestitures. Again the results indicate some clustering across time, although not as extreme as that reported for takeovers. On examining individual industries, only one, Non-ferrous metals, displays a relatively high 2-year cluster of 80%, representing the 1986-87 period. Whereas about half of all takeovers occur within a 2-year period, about 39% of divestitures, on average occur within a 2-year period. Also, the clustering across industries for the full sample is lower than that for takeovers, at 28% (representing the 1988-89 period). We conduct a more formal test for clustering across time by employing a simply equality of variance test, which has the null hypothesis of homoscedasticity. The test is of the form (see, Johnston, 1984, p. 298)

$$Q' = v \ln s^2 - \sum_{i=1}^m v_i \ln s_i^2 \quad (1)$$

Under the null hypothesis,  $Q'$  will be approximately distributed as  $\chi^2 (m-1)$ ,  $m$  denoting the number of industries,  $v \ln s^2$  is the natural log of the variance of the entire sample (where  $v_i = n_i - 1$ ,  $n$  denoting the number of years, i.e., 10) and  $\sum_{i=1}^m v_i \ln s_i^2$  is the natural log of the average variance of the industry sub-groups (where  $v = \sum_{i=1}^m v_i = 378$ ).<sup>7</sup> If  $Q' > \chi^2 (m-1)$  at conventional significance

levels, then the null hypothesis of homoscedasticity would be rejected, implying industry clustering in restructuring over time. The results from the equality of variance test confirm our observation that ‘all takeovers’ cluster over time at the industry level, with a value for  $Q'$  of 201, which with 41 degrees of freedom, is significant at the 1% level, hence rejecting the null of homoscedasticity or no variation in takeovers across time. Similar results are found for successful takeovers. For divestitures, we also find evidence of significant clustering across time with a  $Q'$  value of 231. However, it is likely that this value is sensitive to outliers. For example, the Engineering general industry has a variance of 43.17, significantly higher than the population average of 3.1. When we exclude Engineering general we find a  $Q'$  value of 108, which is still significant at the 1% level.<sup>8</sup>

Insert Table 5 here

#### **4. Modelling broad economic and industry-specific shocks**

The results from section 3 provide some evidence that takeovers appear to cluster both across industries and time. While divestitures do not appear to cluster across industries, there is some evidence that they cluster across time. This section attempts to identify the causes of this clustering. We suspect, given past research, that broad and industry-specific shocks in the form of interest and exchange rate shocks, deregulation, foreign competition and technology shocks play some role in explaining this clustering. This section describes the process followed in developing a model to explain the clustering of takeovers and divestitures. We describe the variables used to proxy broad economics shocks, followed by a description of how we capture industry-specific shocks. Since the sample spans two very different economic climates we partition the sample into two pools representing the 1980s period (1986-89) and the 1990s period (1990-95).<sup>9</sup>

#### 4.1 Broad economic shocks

Generally, previous studies assume that whatever the source of the shock, the outcome is a change in industry structure operationalized through takeovers and other forms of corporate restructuring. To create a proxy for broad economic shocks, Mitchell and Mulherin (1996) compute the absolute value of abnormal industry sales and employment growth for the period of five years prior to their time period of interest, 1982-89. They define the absolute value as the difference between an industry's sales (employment) growth and the average sales (employment) growth across all industries. Taking the absolute value recognises that a shock could have either a positive or negative effect on restructuring. No particular reason is given for using these variables, only that they should capture the economic change experienced by the industry's members. In this paper, we also define broad economic shocks using sales and employment data. We measure the absolute value of the abnormal industry sales and employment growth for the period three years prior to each of our constructed pools. Each of these proxies is used in a simple Tobit regression to explain the variation in takeover and divestiture activity across all industries over both sample periods.<sup>10</sup> Formally, we estimate the following model,

$$R_i = a + b_1 Shock_i + e_i \quad (1)$$

where  $R_i$  represents the restructuring proportions in industry,  $i$ , and  $\beta_1$  is a proxy for broad economic shocks (absolute industry-specific growth). If broad economic shocks are significant determinants of corporate restructuring, we should expect  $\beta_1$  to be significant and positive.

#### 4.2 Industry-specific shocks

Since industry-specific shocks are also likely to have some impact on industry restructuring, we expand the above basic model to include variables that proxy industry-specific factors. Broadly,

the literature has divided industry-specific factors into internal and external factors. The internal factors include growth opportunities, profitability, availability of cash, and industry concentration (Jensen, 1989; 1993). The external factors include changes in technology, industry deregulation and foreign competition (Mitchell and Mulherin, 1996; Mulherin and Boone, 2000). These factors are discussed in more detail below.

### *Internal factors*

Industries characterized as high growth industries are more susceptible to restructuring, especially takeovers. The hypothesis is derived from the ‘empire building’ theory of takeovers, which suggests that a high growth industry will be more attractive to managers who derive a higher utility from controlling larger firms. Additional investment in such sectors would continue to provide higher growth opportunities. For example, Mulherin and Boone (2000) provide evidence of greater takeover and divestiture activities in high growth sectors such as electronics, telecommunication and electrical equipment. Takeovers in high growth industries by low growth acquirers with high resources are more likely to be value enhancing (Myers and Majluf, 1984). Jensen (1986; 1989) argues that in industries characterized as low growth, high free cash flow, hostile takeovers and MBOs become dominant restructuring strategies to preserve shareholder value. To capture these effects, we include industry growth (defined using sales and employment) and a proxy for free cash flow (industry-specific operating cash flow scaled by total assets) in the estimated models.

The degree of concentration within an industry is likely to be an important determinant of the level of corporate restructuring. The concentration of firms in an industry has been related to industry growth with concentration ratios increasing as firms reach maturity. For example, Mitchell and Mulherin (1996) document that the excess capacity in Metals and Mining and Food processing industries in the USA led to greater restructuring activities, which in turn led to industry consolidation. The theory suggests that low concentration industries will have a higher rate of

takeovers as firms compete to gain a greater share of the market. Moreover, the desire to have fewer firms within an industry to enhance market power may lead to takeovers and other restructuring activities.

In terms of corporate restructuring, industry concentration has only been related to takeovers. As far as we are aware, there is no evidence on the relationship between industry concentration on the one hand, and divestitures on the other. This is an empirical issue that will be addressed in this study. To the extent that firms selling assets via divestitures are larger in size, it is reasonable to expect a higher incidence of these activities in high concentration industries.

Several measures are used to determine the extent of concentration in an industry. These measures attempt to capture the prevailing structure and the extent of competitive forces in an industry (see, e.g., Liebeskind, Opler and Hatfield, 1996 and Ratnayake, 1999). Two of these measures are commonly used in calculating industry concentration. First, the four firm concentration ratio defined as the proportion of total sales accounted for by the four largest firms in an industry. Second, the Herfindahl index, defined as the sum of the squared market shares of all incumbent firms. The market share for each firm is defined as the ratio of its sales to the total value of sales in the industry (Liebeskind, Opler and Hatfield, 1996). Hence, larger firms are allocated higher weights to reflect their relative importance in the industry. We employ the Herfindahl index since a few of the industries in our sample have less than ten firms (e.g., Pharmaceuticals). Using the four firm approach in such cases is likely to result in an upward bias in the concentration ratios.

We also include the natural log of the industry average market value as a proxy for size. Size is included simply as a control variable. For example, we would expect larger firms to divest and acquire other firms while smaller firms are more likely to be acquired.

### *External Factors*

External factors include changes in government policies such as deregulation and privatization and the impact of foreign competition. To identify the specific industry shocks

affecting UK industries, we search through the industry background and news contained in *Key Note Market Research Reports* and *Sequencer* for each industry. We identify deregulation, foreign competition and technological innovations as the key shocks affecting specific UK industries over the period 1986 to 1995.

Although several external factors affect corporate restructuring in an industry, deregulation seems to be one of the most significant external factors (Mitchell and Mulherin, 1996 and Mulherin and Boone, 2000). Deregulation removes the artificial constraints imposed on an industry and this induces free entry and exit of firms (Rose, 1985). The exposure of these industries to the pressures of the market and competition requires adaptation, which is facilitated by takeovers and other restructuring activities. In the UK, for example, the privatization of the Telecommunications industry initiated in 1981 led to the sale of government shares in Cable and Wireless and the separation of postal and telecommunication services. This led to the privatization of British Telecom in 1984. The industry was further deregulated in 1991 when the duopoly of British Telecom and Mercury was terminated. These changes have dramatically altered the Telecommunications industry, allowing numerous new entrants into the market. Similar developments have taken place in the Electricity, Water and Transport industries. To empirically examine the role of deregulation in corporate restructuring, we create a dummy variable equal to one for the deregulated industries and zero for all other industries.

Foreign competition affects demand and profitability of the affected industries. This may lead to various forms of corporate restructuring. For example, stiff competition from overseas, causing a decline in industry sales growth can result in takeovers as a mechanism to quickly increase market power and thereby withstand competition. Mitchell and Mulherin (1996), however, failed to find any significant relationship between foreign competition and takeovers. In the UK, foreign competition has been a major problem affecting some industries such as the Automobile, Aerospace and Defence, Construction and Electronic industries. In the 1990s, the UK motor industry, for example, suffered greatly from foreign competition, which led to low profitability in

the industry. Furthermore, the high value of the pound resulted in the industry losing ground to overseas imports. To create a proxy for foreign competition, we use a dummy variable equal to one for those industries sensitive to foreign competition and zero otherwise.

The need for continuous improvement in products and processes is widely publicized. The mechanisms needed for such continual improvements in products to be achieved are often less clearly defined. Changes in technology and innovations are largely brought about by research and development activities (R&D). For example, the Pharmaceutical industry in the UK is undergoing rapid technological advances with the aim of improving the quality of their products. Computers, Telecommunications, Electronics and Media are other sectors that are experiencing fast technological changes. Technological changes are common to almost all sectors of UK economy although it is more dramatic in certain industries. It is argued that the rate of restructuring, in particular takeovers, should be higher in low technology industries. Such industries are likely to spend less on R&D expenditures and as such will have relatively low growth options. While Mitchell and Mulherin (1996) find significant evidence of takeover activity being concentrated in low R&D industries for the 1980s, Mulherin and Boone (2000) fail to find any relationship for the 1990s. In other words, takeovers in the 1990s were not restricted to industries characterized as having low growth options or low technology levels. We use the ratio of R&D to sales as a proxy for technology and innovations and growth options.

Including the above industry-specific variables to our basic model we arrive at the full model,

$$R_i = a + b_1 shock_i + b_2 growth_i + b_3 FCF + b_4 CON + b_5 DERG + b_6 FCOM + b_7 TECH + b_8 size + e_i \quad (2)$$

where shock is our proxy for broad economic shocks, growth is industry sales growth, FCF is a proxy for free cash flow, CON is a proxy for industry concentration, DERG is a dummy variable for

deregulation, FCOM is a dummy variable for foreign competition, TECH is a proxy for technological innovation and size is the natural log of average industry size.

## 5. Results (under construction!)

This section reports the findings of a univariate and multivariate analysis of the data. Descriptive statistics and correlation coefficients between the variables and takeover and divestiture proportions are presented in section 5.1, followed by the results of the estimated Tobit regressions in section 5.2.

### 5.1 Descriptive statistics

Tables 6 and 7 present some descriptive statistics and correlation coefficients for the variables employed in the models. As expected, the results show differences in the rates of takeover and divestiture activity across both pools (1986-89 and 1990-95). Differences also exist in the sales (employment) growth and shock variables. The correlation coefficients presented in Table 7 provide more interesting results. We find a positive correlation between sales shock and takeover activity (successful and all takeovers). On the other hand, we find a negative relationship between the rate of divestitures and the sales (employment) shock variable. Since the correlation coefficient between takeovers and divestitures is negative, both would appear to be direct substitutes. That is, firms that divest are unlikely to be acquired at a later date. Hence, broad economic shocks are likely to impact on the rates of takeovers and divestitures differently. The results presented here suggest that industries sensitive to broad economic shocks are less likely to divest in such an environment.

Insert tables 6-7 here

The correlation between the industry-specific variables and takeovers and divestiture activity also provide some insights. First, deregulation only appears to have a positive impact on

takeover activity. Furthermore, this result only holds for the 1990s period. One explanation for this result is that several of the industries in the sample were only deregulated in the late 1980s and early 1990s. Furthermore, several industries impacted by deregulation do not appear in our sample due to the way it was constructed.<sup>11</sup> Second, there is a negative correlation between deregulation and divestitures, indicating that industries impacted by deregulation are less likely to divest. In terms of market share, this makes some sense for industries impacted by deregulation. Third, and as expected, takeovers (divestitures) are more likely to occur in low (high) concentration industries. Fourth, the threat of foreign competition has a positive (negative) impact on takeover (divestiture) activity. Again, maintaining market share may be some importance to firms belonging to industries susceptible to foreign competition. Fifth, smaller (larger) industries are more likely to experience higher takeover (divestiture) activity.

## *5.2 Tobit regressions*

Tables 8 and 9 present the results for the estimated regressions. Tobit regressions are estimated first in a univariate fashion (models 1 to 8) and then for the full model, with all variables included (model 9).

Insert tables 8-9 here

The results from Table 8 show some significance for broad economic shocks (shock) and a few of the industry-specific shocks. In particular, concentration (CON), foreign competition (FCOM), deregulation (DERG) and size (SIZE) are all related to takeover activity, although for several variables, the level of statistical significance is marginal.<sup>12</sup> The results also appear to be sensitive across different time periods, but are consistent with our expectations as discussed in section 5.1. Table 9 presents the results for divestitures. Again, the findings are consistent with our expectations outlined in section 5.1. Broad shocks (shock) cause a decline in the rate of

divestitures, although as with takeover activity, this relationship only holds for the 1986-89 period.<sup>13</sup> Industry size (SIZE) plays a significant role in determining the rate of divestitures, with higher activity in larger industries. With the exception of industry size, there appear to be no other significant determinants of divestiture activity in the 1990s period.

## **6. Summary and conclusions**

This paper provides some evidence of clustering across industries in the rate of takeover activity and also across time for both the rate of takeovers and divestiture activity. The paper then attempts to explain this clustering using a proxy for broad economic shocks and several proxies for industry-specific shocks. The results provide some evidence in support of broad shocks and several industry-specific factors, such as deregulation, foreign competition and industry concentration. However, shocks appear to impact on the rate of takeovers and divestitures differently. For example, while broad shocks (proxied using sales and employment absolute growth) and several industry specific shocks (e.g., deregulation and foreign competition) have a positive impact on the level of takeovers, the opposite can be said for the level of divestitures. From a market power perspective, this relationship would be expected, particularly during the 1980s, a period of high economic growth.

## Notes

1. Unfortunately, many studies at the firm level also provide fairly mixed evidence on the determinants of corporate restructuring. For example, while some find prior performance, free cash flow and size as important determinants of a firm's takeover likelihood, other fail to find support for these characteristics (see, e.g., Martin and McConnell, 1991; Franks and Mayer, 1996). Another problem is that many of the models suffer from low explanatory power. For example, Palepu's (1986) best model has a pseudo  $R^2$  of only 12%.
2. A takeover occurs when the acquiring firm accumulates a controlling interest in the target firm, either through a friendly (with the agreement of the target management) or hostile bid (rejected by management). A divestiture is defined as the sale of a subsidiary by the parent company to a third party (otherwise known as a sell-off) or to management (otherwise known as a management buyout).
3. For example, unlike the USA, the Takeover Code in the UK prevents the use of poison pills once a takeover bid has been made.
4. One problem with the above approach to measuring corporate restructuring activity is that it ignores new firms over the sample period. Like Mitchell and Mulherin (1996) and Mulherin and Boone (2000) we hold the number of firms in each industry constant throughout the sample period. For example, takeover activity is calculated each year as a proportion of firms that existed in the industry at the beginning of the sample period, 1985 in our case. Since newly listed firms are more likely to be targets for takeover or suffer financial distress, ignoring these firms is likely to bias our proportions.

5. The Pearson  $\chi^2$  is defined as  $\sum_i (\text{Actual}_i - \text{Expected}_i)^2 / \text{Expected}_i$ , where  $i$  represents the 42 industries in the sample and  $\text{expected}_i$  equals the product of the average takeover (divestiture) activity for the full sample times the number of firms in the  $i$ th industry. We also compute a variant of the Pearson  $\chi^2$ , the Likelihood Ratio Test, defined as  $2\sum_i (\text{Actual}_i \ln(\text{Actual}_i / \text{Expected}_i))$ . The results are consistent.
6. Pearson  $\chi^2$  and Likelihood Ratio Test computed using value-weighted averages are similar to those reported.
7. Johnston (1984, p. 298) notes that the approximation can be improved by dividing  $Q'$  by the scaling constant  $C = 1 + \frac{1}{3(m-1)} \left( \sum_{i=1}^m \frac{1}{v_i} - \frac{1}{v} \right)$ , to give  $Q = Q'/C$ . We make this adjustment using a value of 1.04 for  $C$ , but find no significant difference in our  $Q'$  values.
8. It is clear from Tables 4 and 5 that the 1980s period is significant time period in terms of the volume of takeover and divestiture transactions. As a sensitivity test, we re-calculate our equality of variance tests on separate time periods: 1986-89 and 1990-95. For the 1980s period,  $Q'$  is 69 for 'all takeovers' and 105 for divestitures (with Engineering general removed. For the 1990s period, the respective values are 72 and 128. This suggests that both takeovers and divestitures cluster across time, even within distinct time periods.
9. We divided the sample for two reasons. First, it is highly unlikely that shocks measured from early 1980s (i.e., 1983-85) would have any explanatory power in explaining takeover and divestiture activity in the 1990s. Second, splitting the sample allows us to examine whether different factors were important in explaining corporate restructuring in the 1980s and 1990s. There is some evidence to suggest that takeovers in the 1990s were motivated

from an industry consolidation perspective, whereas those during the 1980s were motivated from a agency costs perspective (see, e.g., Shleifer and Vishny, 2001).

10. Tobit is used because the data is censored, that is, the restructuring proportions lie between 0 and 1. Both Mitchell and Mulherin (1996) and Mitchell and Boone (2000) employed simple OLS regressions. Unfortunately, they do not report whether they performed any robustness tests on the suitability of OLS for the models estimated. Naturally, given the nature of the data, it is unlikely that the assumptions implicit an OLS would be met.
11. Since we hold the sample composition constant from 1985, new industries and several deregulated industries do not appear. For example, Water and Electricity were only deregulated in the late 1980s and early 1990s. Naturally, this will bias our results against finding deregulation an important determinant of takeover and divestiture activity.
12. The results are consistent with those reported when we use ‘all takeover’ activity as the dependent variable. Although, there is some impact in the level of statistical significance. For example, concentration (CON) is significant at the 1% level. Also, when we replace sales shock with employment shock, the level of significance increases to the 1% level.
13. It is likely that our results for the 1990-95 period are biased since our sample does not include the takeover boom of the late 1990s (1996-98). For example, Table 6 indicates that the average takeover rate for the 1990-95 period was only 5% compared to an average rate of 19% for the 1986-89 period. On the other hand, the rate of divestitures is higher for the 1990s period (70%) compared to the 1980s (58%). The 1990s period captures the economic downturn of the early 1990s, a period when divestitures would play a significant role in restructuring firms in the face of recession.

## References

- Denis, D. J. and T. A. Kruse (2000), 'Managerial Discipline and Corporate Restructuring following Performance Decline', *Journal of Financial Economics*, Vol. 55, pp. 391-424.
- Denis, D. J. and A. Sarin (1999), 'Ownership and Board Structures in Publicly Traded Corporations' *Journal of Financial Economics*, Vol. 52, pp. 187-223.
- Franks, J. and Mayer, C. (1996), 'Hostile Takeovers and the Correction of Managerial Failure' *Journal of Financial Economics*, Vol. 40, pp. 163-181.
- Gort, M. (1969), 'An Economic Disturbance Theory of Mergers', *Quarterly Journal of Economics*, Vol. 82, pp. 624-642
- Gorton, G. and M. Kahl (1999), 'Blockholder Identity, Equity Ownership Structures, and Hostile Takeovers', Working Paper, University of Pennsylvania and University of California, Los Angeles.
- Hanney, J. (1986), 'The Management buyout – An Offer You Can't Refuse' *Omega* Vol. 14(2), pp. 119-134.
- Harford, J. (1999), 'Corporate cash reserves and acquisitions', *Journal of Finance*, Vol. 54, pp. 1969-1997.
- Jensen, M. C. (1986), 'Agency Costs of Free Cash Flow, Corporate Finance and Takeovers' *American Economic Review*, Vol. 76, pp. 323-329.
- Jensen, M. C. (1989), 'Eclipse of the Public Corporation', *Harvard Business Review*, (September-October) pp. 60-74.
- Jensen, M. C. (1993), 'The Modern Industrial Revolution and the Challenge to the Internal Control Systems' *Journal of Finance*, Vol. 48, pp. 831-880.
- Lennox, C. (1999), 'Identifying Failing Companies: A Re-evaluation of the Logit, Probit and DA Approaches', *Journal of Economics and Business*, Vol. 51, pp. 347-364.
- Liebeskind, J. L. T. C. Opler and D. E. Hatfield (1996), 'Corporate Restructuring and the Consolidation of US Industry', *Journal of Industrial Economics*, Vol. 44, pp. 53-68.
- Martin, K. and J. McConnell (1991), 'Corporate Performance, Corporate Takeovers and Management Turnover', *Journal of Finance*, Vol. 46, pp. 671-687.
- Mitchell, M. L., and J. H. Mulherin (1996), 'The Impact of Industry Shocks on Takeover and Restructuring Activity', *Journal of Financial Economics*, Vol. 41, pp. 193-229.
- Morck, R; A. Shleifer and R. W. Vishny (1988), 'Characteristics of Targets of Hostile and Friendly takeovers, in: Alan J. Auerbach, ed., *Corporate Takeovers: Causes and Consequences* (National Bureau of Economic Research, Chicago, IL) pp. 101-129.
- Morck, R; A. Shleifer and R. W. Vishny (1989), 'Alternative Mechanisms for Corporate Control', *American Economic review*, Vol. 79, pp. 842-852.

- Mulherin, J. H. and A. L. Boone (2000), 'Comparing Acquisitions and Divestitures', *Journal of Corporate Finance*, Vol. 6, pp. 117-139.
- Palepu, K. G. (1986), 'Predicting Takeover Targets: a Methodological and Empirical Analysis', *Journal of Accounting and Economics*, Vol 8, pp. 3-35.
- Peel, M. J., (1995), 'The Impact of Corporate Restructuring: Mergers, Divestment and MBOs', *Long Range Planning*, Vol. 28, pp. 92-101.
- Powell, R. G. (1997), 'Modelling Takeover Likelihood', *Journal of Business Finance and Accounting*, Vol. 24 No. 7, pp. 1009-1030.
- Ratnayake, R. (1999), 'Industry Concentration and Competition: New Zealand Experience', *International Journal of Industrial Organisation*, Vol. 17, pp. 1041-1057.
- Rose, N. L. (1985), 'The Incidence of Regulatory Rents in the Motor Carrier Industry' *Rand Journal of Economics*, Vol. 16, pp. 299-318.
- Schoenberg, R. and R. Reeves (1999), 'What Determines Acquisition Activity within an Industry?' *European Management Journal*, Vol. 17, pp. 93-98.
- Shleifer, A. and R. Vishny (2001). 'Stock Market Driven Acquisitions', NBER Working Paper 8439.
- Thompson, S., M. Wright, and K. Robbie (1992), 'Buyouts, Divestment and Leverage: Restructuring Transactions and Corporate Governance', *Oxford Review of Economic Policy*, Vol. 8, No. 3, pp. 58-69.
- Warner, J. B., R. L.watts and K. H Wruck (1988), 'Stock Prices and Top Management Changes' *Journal of Financial Economics*, Vol. 20, pp. 461-492.
- Weisbach, M. S. (1988), 'Outside Directors and CEO Turnover', *Journal of Financial Economics*, Vol. 20, pp. 431-460.

Table 1: Industry distribution of sample firms

| Industry                           | Number of Firms | % Sample | Market value (£ Millions) | % Value |
|------------------------------------|-----------------|----------|---------------------------|---------|
| Engineering, general               | 107             | 9.97     | 8,636                     | 5.71    |
| Electronic equipment               | 64              | 5.96     | 10,259                    | 6.78    |
| Business support                   | 43              | 4.01     | 3,162                     | 2.09    |
| Food processors                    | 43              | 4.01     | 12,630                    | 8.35    |
| Clothing & footwear                | 39              | 3.63     | 850                       | 0.56    |
| Retail, hard-lines                 | 38              | 3.54     | 2,891                     | 1.91    |
| Building materials                 | 37              | 3.45     | 9,050                     | 5.98    |
| House building                     | 37              | 3.45     | 1,861                     | 1.23    |
| Textiles & leather goods           | 36              | 3.36     | 1,435                     | 0.95    |
| Electrical equipment               | 34              | 3.17     | 2,445                     | 1.62    |
| Publishing & printing              | 32              | 2.98     | 5,856                     | 3.87    |
| Oil & gas exploration / production | 29              | 2.70     | 20,700                    | 13.68   |
| Leisure facilities                 | 28              | 2.61     | 1,486                     | 0.98    |
| Other businesses                   | 28              | 2.61     | 267                       | 0.18    |
| Packaging                          | 27              | 2.52     | 1,069                     | 0.71    |
| Auto parts                         | 25              | 2.33     | 3,716                     | 2.46    |
| Engineering. Fabricators           | 24              | 2.24     | 173                       | 0.11    |
| Furniture & floor-covering         | 23              | 2.14     | 274                       | 0.18    |
| Rail, road & freight               | 23              | 2.14     | 2,294                     | 1.52    |
| Vehicle distribution               | 23              | 2.14     | 869                       | 0.57    |
| Other construction                 | 22              | 2.05     | 1,206                     | 0.80    |
| Breweries, pubs & restaurants      | 21              | 1.96     | 4,502                     | 2.98    |
| Engineering contractors            | 21              | 1.96     | 684                       | 0.45    |
| Chemicals, commodity               | 20              | 1.86     | 7,555                     | 4.99    |
| Diversified industry               | 19              | 1.77     | 2,003                     | 1.32    |
| Food & drug retailers              | 18              | 1.68     | 8,596                     | 5.68    |
| Chemicals, specialty               | 17              | 1.58     | 2,114                     | 1.40    |
| Distribution industrial companies  | 17              | 1.58     | 1,056                     | 0.70    |
| Retailers, multi-department        | 17              | 1.58     | 8,528                     | 5.64    |
| Beverages                          | 16              | 1.49     | 4,795                     | 3.17    |
| Broadcasting                       | 16              | 1.49     | 462                       | 0.31    |
| Hotels                             | 16              | 1.49     | 1,932                     | 1.28    |
| Builders merchants                 | 15              | 1.40     | 844                       | 0.56    |
| Aerospace                          | 14              | 1.30     | 2,515                     | 1.66    |
| Other distributors                 | 13              | 1.21     | 262                       | 0.17    |
| Retailers, soft goods              | 13              | 1.21     | 3,027                     | 2.00    |
| Software                           | 13              | 1.21     | 444                       | 0.29    |
| Non-ferrous metals                 | 12              | 1.12     | 191                       | 0.13    |
| Medical equipment & supplies       | 9               | 0.84     | 1,292                     | 0.85    |
| Media agencies                     | 9               | 0.84     | 577                       | 0.38    |
| Chemicals, advanced materials      | 8               | 0.75     | 288                       | 0.19    |
| Pharmaceuticals                    | 7               | 0.65     | 8,487                     | 5.61    |
| Total                              | 1073            | 100      | 151,284                   | 100     |
| Mean                               | 25.55           | 2.38     | 3,602                     | 2.38    |
| Median                             | 21.50           | 2.00     | 1,968                     | 1.30    |
| Standard deviation                 | 17.37           | 1.62     | 4,266                     | 2.82    |

*Notes:*

The Table presents the number and total market value of sample firms by industry. The sample is formed from firms listed on the LSE at the end of 1985 with financial information stored on Datastream. The % sample is the proportion of firms in an industry to the number of firms in the sample. The % value is the proportion of market value of an industry to the total market value of the sample firms as at the end of 1985.

Table 2: Frequency of takeovers and divestitures

| Restructuring Event     | Number of Firms | % Sample | Average total market value (£ Millions) |
|-------------------------|-----------------|----------|-----------------------------------------|
| Successful Takeovers    | 347             | 32.34    | 55                                      |
| All Takeovers bids      | 378             | 35.23    | 69                                      |
| Divestitures            | 469             | 43.71    | 237                                     |
| Non Restructuring Firms | 226             | 21.06    | 81                                      |
| Full Sample             | 1073            | 100.00   | 141                                     |

*Notes:*

The Table reports the overall corporate restructuring events of firms existing on the LSE as at 1985 for the ten-year period, 1986-1995. We do not adjust for any new firms and industries coming onto the LSE. Information on restructuring events are compiled from Acquisitions Monthly, published by Thompson Financial Services. Divestitures represent the number of firms that sold subsidiaries to third parties, including management. Takeovers refer to both successful and failed takeover attempts. Average total market value is the mean total market value of firms in each restructuring classification, calculated as the market value of equity plus the book value of debt. The total number of firms (1073) is composed of 378 takeover bids, 469 divestitures and 226 non-restructuring firms.

Table 3: Industry distribution of takeovers and divestitures

## Panel A: Equally weighted averages

| Industry                           | No of Firms | % Successful<br>Takeovers | % All Takeovers | % Divestitures |
|------------------------------------|-------------|---------------------------|-----------------|----------------|
| Engineering, general               | 107         | 28.04                     | 33.64           | 59.81          |
| Electronic equipment               | 64          | 54.69                     | 60.94           | 39.06          |
| Business support                   | 43          | 34.88                     | 44.19           | 48.84          |
| Food processors                    | 43          | 41.86                     | 44.19           | 48.84          |
| Clothing & footwear                | 39          | 38.46                     | 43.59           | 17.95          |
| Retail, hard-lines                 | 38          | 52.63                     | 57.89           | 36.84          |
| Building materials                 | 37          | 18.92                     | 24.32           | 62.16          |
| House building                     | 37          | 24.32                     | 29.73           | 35.14          |
| Textiles & leather goods           | 36          | 33.33                     | 36.11           | 33.33          |
| Electrical equipment               | 34          | 38.24                     | 38.24           | 44.12          |
| Publishing & printing              | 32          | 15.63                     | 18.75           | 43.75          |
| Oil & gas exploration / production | 29          | 37.93                     | 37.93           | 34.48          |
| Leisure facilities                 | 28          | 35.71                     | 35.71           | 35.71          |
| Other businesses                   | 28          | 25.00                     | 25.00           | 28.57          |
| Packaging                          | 27          | 59.26                     | 62.96           | 37.04          |
| Auto parts                         | 25          | 36.00                     | 36.00           | 52.00          |
| Engineering fabricators            | 24          | 37.50                     | 37.50           | 29.17          |
| Furniture & floor-covering         | 23          | 26.09                     | 26.09           | 39.13          |
| Rail, road & freight               | 23          | 21.74                     | 26.09           | 39.13          |
| Vehicle distribution               | 23          | 34.78                     | 34.78           | 43.48          |
| Other construction                 | 22          | 0.00                      | 13.64           | 54.55          |
| Breweries, pubs & restaurants      | 21          | 9.52                      | 19.05           | 47.62          |
| Engineering contractors            | 21          | 47.62                     | 47.62           | 28.57          |
| Chemicals, commodity               | 20          | 50.00                     | 55.00           | 45.00          |
| Diversified industry               | 19          | 42.11                     | 47.37           | 73.68          |
| Food & drug retailers              | 18          | 16.67                     | 27.78           | 61.11          |
| Chemicals, specialty               | 17          | 0.00                      | 5.88            | 82.35          |
| Distribution industrial companies  | 17          | 0.12                      | 0.12            | 43.75          |
| Retailers, multi-dept              | 17          | 5.88                      | 5.88            | 23.53          |
| Beverages                          | 16          | 31.25                     | 31.25           | 43.75          |
| Broadcasting                       | 16          | 25.00                     | 25.00           | 43.75          |
| Hotels                             | 16          | 50.00                     | 50.00           | 56.25          |
| Builders merchants                 | 15          | 40.00                     | 40.00           | 40.00          |
| Aerospace                          | 14          | 21.43                     | 21.43           | 71.43          |
| Other distributors                 | 13          | 23.08                     | 23.08           | 46.15          |
| Retailers, soft goods              | 13          | 0.00                      | 0.00            | 53.84          |
| Software                           | 13          | 7.69                      | 7.69            | 30.77          |
| Non-ferrous metals                 | 12          | 33.33                     | 33.33           | 33.33          |
| Med equip + supplies               | 9           | 11.11                     | 11.11           | 44.44          |
| Media agencies                     | 9           | 44.44                     | 44.44           | 55.56          |
| Chemicals advanced materials       | 8           | 62.50                     | 62.50           | 37.50          |
| Pharmaceuticals                    | 7           | 14.29                     | 28.57           | 42.86          |
| Mean                               | 25.55       | 29.31                     | 32.25           | 44.48          |
| Median                             | 21.50       | 32.29                     | 33.49           | 43.75          |
| Standard Deviation                 | 17.37       | 16.83                     | 16.46           | 13.30          |

Table 3 continued:  
Panel B: Value-weighted averages

| Industry                           | Market Value | % Successful Takeovers | % All Takeovers | % Divestitures |
|------------------------------------|--------------|------------------------|-----------------|----------------|
| Aerospace                          | 2,515        | 3.85                   | 3.85            | 96.99          |
| Auto parts                         | 3,716        | 24.39                  | 24.39           | 78.13          |
| Beverages                          | 4,795        | 40.27                  | 40.27           | 59.73          |
| Breweries, pubs & restaurants      | 4,502        | 2.24                   | 2.77            | 88.15          |
| Broadcasting                       | 462          | 8.74                   | 8.74            | 80.48          |
| Builders merchants                 | 844          | 15.13                  | 15.13           | 57.33          |
| Building materials                 | 9,050        | 1.72                   | 4.72            | 89.19          |
| Business support                   | 3,162        | 16.90                  | 29.58           | 73.33          |
| Chemicals, commodity               | 7,555        | 5.22                   | 5.47            | 30.48          |
| Chemicals, specialty               | 2,114        | 0.00                   | 0.63            | 97.12          |
| Chemicals advanced materials       | 288          | 23.42                  | 23.42           | 59.31          |
| Clothing & footwear                | 850          | 15.38                  | 17.93           | 44.23          |
| Distribution industrial companies  | 1,056        | 0.03                   | 0.03            | 53.22          |
| Diversified industry               | 2,003        | 7.93                   | 12.04           | 89.86          |
| Electrical equipment               | 2,445        | 59.08                  | 59.08           | 84.13          |
| Electronic equipment               | 10,259       | 30.60                  | 47.61           | 85.08          |
| Engineering contractors            | 684          | 74.69                  | 74.69           | 23.01          |
| Engineering Fabricators            | 173          | 41.46                  | 41.46           | 40.58          |
| Engineering, general               | 8,636        | 7.03                   | 13.67           | 87.96          |
| Food & drug retailers              | 8,596        | 3.74                   | 19.12           | 70.61          |
| Food processors                    | 12,630       | 13.29                  | 21.02           | 91.62          |
| Furniture & floor-covering         | 274          | 59.03                  | 59.03           | 25.89          |
| Hotels                             | 1,932        | 8.05                   | 8.05            | 95.06          |
| House building                     | 1,861        | 7.44                   | 12.02           | 56.67          |
| Leisure facilities                 | 1,486        | 29.55                  | 29.55           | 68.48          |
| Med equip & supplies               | 1,292        | 7.07                   | 7.07            | 91.34          |
| Media agencies                     | 577          | 16.94                  | 16.94           | 79.61          |
| Non-ferrous metals                 | 191          | 30.87                  | 30.87           | 29.02          |
| Oil & gas exploration / production | 20,700       | 10.47                  | 10.47           | 54.52          |
| Other businesses                   | 267          | 24.19                  | 24.19           | 76.41          |
| Other construction                 | 1,206        | 0.00                   | 13.94           | 87.26          |
| Other distributors                 | 262          | 7.40                   | 7.40            | 19.53          |
| Packaging                          | 1,069        | 43.87                  | 47.82           | 76.47          |
| Pharmaceuticals                    | 8,487        | 0.04                   | 0.43            | 99.46          |
| Publishing & printing              | 5,856        | 7.67                   | 7.78            | 72.08          |
| Rail, road & freight               | 2,294        | 15.17                  | 24.56           | 25.60          |
| Retail, hard-lines                 | 2,891        | 28.46                  | 58.46           | 68.83          |
| Retailers, multi dept              | 8,528        | 0.92                   | 0.92            | 77.55          |
| Retailers, soft goods              | 3,027        | 0.00                   | 0.00            | 76.95          |
| Software                           | 444          | 30.83                  | 30.83           | 26.64          |
| Textiles & leather goods           | 1,435        | 35.68                  | 45.44           | 51.37          |
| Vehicle distribution               | 869          | 30.77                  | 30.77           | 75.28          |
| Mean                               | 3,602        | 18.80                  | 22.19           | 67.01          |
| Median                             | 1,968        | 14.21                  | 17.43           | 74.30          |
| Standard deviation                 | 4,266        | 18.17                  | 19.11           | 23.63          |

Notes:

The table presents corporate restructuring activities for the period 1986-1995 across 42 industries for 1073 firms existing at the end of 1985. The sample firms are drawn from Datastream. Panel A reports the equally weighted average, which is the proportion of firms in an industry that experience restructuring activity. Panel B reports the value-weighted averages, which shows the proportion of market value of an industry, based on 1985 total market values that experience restructuring events. Please, refer to Table 2 for the definitions of restructuring events.

Table 4  
Panel A: All takeovers by year

| Industry                      | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | Max 2-year<br>Cluster % |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|-------------------------|
| Media agencies                | 0    | 0    | 0    | 0    | 3    | 3    | 0    | 0    | 0    | 0    | 100                     |
| Leisure facilities            | 0    | 6    | 2    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 80                      |
| Building materials            | 1    | 4    | 3    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 78                      |
| Medical equipment/supplies    | 0    | 0    | 0    | 0    | 2    | 1    | 0    | 0    | 0    | 1    | 75                      |
| Other businesses              | 3    | 2    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 71                      |
| Engineering contractors       | 4    | 3    | 2    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 70                      |
| Aerospace                     | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 2    | 0    | 67                      |
| Engineering fabricators       | 1    | 5    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 67                      |
| Other distributors            | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 2    | 67                      |
| Publishing & printing         | 2    | 2    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 67                      |
| Chemicals, advanced           | 2    | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 60                      |
| Food processors               | 1    | 1    | 1    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 60                      |
| Auto parts                    | 4    | 1    | 0    | 2    | 1    | 1    | 0    | 0    | 0    | 0    | 56                      |
| Diversified industry          | 2    | 3    | 1    | 1    | 1    | 0    | 0    | 1    | 0    | 0    | 56                      |
| House building                | 3    | 3    | 2    | 0    | 1    | 1    | 0    | 0    | 0    | 1    | 55                      |
| Textiles & leather goods      | 2    | 3    | 4    | 2    | 1    | 0    | 0    | 0    | 0    | 1    | 54                      |
| Beverages                     | 2    | 1    | 1    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 50                      |
| Breweries, pubs & restaurants | 1    | 0    | 0    | 0    | 0    | 0    | 2    | 0    | 0    | 1    | 50                      |
| Broadcasting                  | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 2    | 0    | 50                      |
| Builders merchants            | 3    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 1    | 50                      |
| Distributors, industrial      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 1    | 50                      |
| Furniture & floor-covering    | 2    | 1    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 50                      |
| Hotels                        | 1    | 3    | 1    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 50                      |
| Non-ferrous metals            | 1    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 50                      |
| Pharmaceuticals               | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 50                      |
| Vehicle distribution          | 1    | 3    | 0    | 1    | 2    | 0    | 0    | 0    | 1    | 0    | 50                      |
| Retail, hard-lines            | 5    | 5    | 4    | 2    | 2    | 2    | 0    | 0    | 1    | 0    | 48                      |
| Electrical equipment          | 1    | 1    | 5    | 1    | 0    | 2    | 0    | 0    | 3    | 0    | 46                      |
| Chemicals, commodity          | 1    | 2    | 2    | 3    | 0    | 0    | 2    | 0    | 0    | 1    | 45                      |
| Oil & gas exploration         | 1    | 0    | 3    | 2    | 0    | 2    | 0    | 0    | 1    | 2    | 45                      |
| Food & drug retailers         | 6    | 2    | 3    | 3    | 1    | 2    | 1    | 0    | 1    | 0    | 42                      |
| Business support              | 3    | 3    | 1    | 5    | 2    | 0    | 1    | 1    | 1    | 0    | 41                      |
| Engineering, general          | 12   | 2    | 3    | 4    | 7    | 3    | 1    | 1    | 2    | 1    | 39                      |
| Clothing & footwear           | 4    | 2    | 3    | 3    | 1    | 1    | 0    | 1    | 1    | 1    | 35                      |
| Other construction            | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 33                      |
| Packaging                     | 1    | 3    | 2    | 3    | 2    | 3    | 0    | 0    | 0    | 1    | 33                      |
| Rail, road & freight          | 1    | 1    | 0    | 1    | 1    | 0    | 0    | 1    | 1    | 0    | 33                      |
| Electronic equipment          | 3    | 4    | 8    | 3    | 6    | 5    | 1    | 3    | 1    | 3    | 32                      |
| Chemicals, speciality         | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Retailers, multi-dept         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0                       |
| Software                      | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Retailers, soft goods         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Annual total                  | 74   | 69   | 57   | 48   | 40   | 33   | 9    | 10   | 17   | 21   | 38                      |
| % of all takeovers            | 20   | 18   | 15   | 13   | 11   | 9    | 2    | 3    | 4    | 6    |                         |

Notes:

The Table reports the number of successful takeovers by industry by year for the sample of 1073 firms from 42-industries over the 10-year period, 1986-95. A successful takeover is assigned to the year in which the bid went unconditional. Maximum 2-year cluster is the greatest percentage of takeovers occurring in an industry in an adjacent 2-year period.

Table 4 continued:  
Panel B: Successful takeovers by year

| Industry                      | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | Max 2-year<br>Cluster % |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|-------------------------|
| Media agencies                | 0    | 0    | 0    | 0    | 3    | 3    | 0    | 0    | 0    | 0    | 100                     |
| Building materials            | 0    | 3    | 3    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 86                      |
| Leisure facilities            | 0    | 6    | 2    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 80                      |
| Medical equipment/supplies    | 0    | 0    | 0    | 0    | 2    | 1    | 0    | 0    | 0    | 1    | 75                      |
| Other businesses              | 3    | 2    | 0    | 2    | 0    | 0    | 0    | 0    | 0    | 0    | 71                      |
| Engineering contractors       | 4    | 3    | 2    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 70                      |
| Aerospace                     | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 2    | 0    | 67                      |
| Engineering fabricators       | 1    | 5    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 1    | 67                      |
| Food processors               | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 67                      |
| Other distributors            | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 2    | 67                      |
| Diversified industry          | 2    | 3    | 0    | 1    | 1    | 0    | 0    | 1    | 0    | 0    | 63                      |
| Beverages                     | 2    | 1    | 1    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 60                      |
| Chemicals, advanced           | 2    | 1    | 0    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 60                      |
| Publishing & printing         | 1    | 2    | 0    | 1    | 1    | 0    | 0    | 0    | 0    | 0    | 60                      |
| Textiles & leather goods      | 2    | 3    | 4    | 1    | 1    | 0    | 0    | 0    | 0    | 1    | 58                      |
| Auto parts                    | 4    | 1    | 0    | 2    | 1    | 1    | 0    | 0    | 0    | 0    | 56                      |
| House building                | 3    | 2    | 1    | 0    | 1    | 1    | 0    | 0    | 0    | 1    | 56                      |
| Retail, hard-lines            | 6    | 5    | 4    | 1    | 1    | 2    | 0    | 0    | 1    | 0    | 55                      |
| Business support              | 5    | 3    | 1    | 2    | 1    | 0    | 1    | 1    | 1    | 0    | 53                      |
| Breweries, pubs & restaurants | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 50                      |
| Broadcasting                  | 0    | 0    | 0    | 1    | 0    | 1    | 0    | 0    | 2    | 0    | 50                      |
| Builders merchants            | 3    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 1    | 50                      |
| Chemicals, commodity          | 1    | 2    | 2    | 3    | 0    | 0    | 1    | 0    | 0    | 1    | 50                      |
| Distributors, industrial      | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0    | 1    | 50                      |
| Furniture & floor-covering    | 2    | 1    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 0    | 50                      |
| Hotels                        | 1    | 3    | 1    | 0    | 3    | 0    | 0    | 0    | 0    | 0    | 50                      |
| Non-ferrous metals            | 1    | 0    | 2    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 50                      |
| Vehicle distribution          | 1    | 3    | 0    | 1    | 2    | 0    | 0    | 0    | 1    | 0    | 50                      |
| Electrical equipment          | 1    | 1    | 5    | 1    | 0    | 2    | 0    | 0    | 3    | 0    | 46                      |
| Oil & gas exploration         | 1    | 0    | 3    | 2    | 0    | 2    | 0    | 0    | 1    | 2    | 45                      |
| Clothing & footwear           | 4    | 2    | 2    | 2    | 1    | 1    | 0    | 1    | 1    | 1    | 40                      |
| Rail, road & freight          | 0    | 1    | 0    | 1    | 1    | 0    | 0    | 1    | 1    | 0    | 40                      |
| Food & drug retailers         | 5    | 2    | 3    | 3    | 1    | 2    | 1    | 0    | 1    | 0    | 39                      |
| Engineering, general          | 10   | 2    | 2    | 3    | 7    | 3    | 0    | 1    | 2    | 1    | 39                      |
| Packaging                     | 1    | 3    | 2    | 4    | 2    | 3    | 0    | 0    | 0    | 1    | 38                      |
| Electronic equipment          | 3    | 5    | 8    | 3    | 6    | 4    | 0    | 2    | 1    | 3    | 37                      |
| Pharmaceuticals               | 0    | 0    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Retailers, multi-dept         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 1    | 0                       |
| Software                      | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Chemicals, speciality         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Other construction            | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Retailers, soft goods         | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0                       |
| Annual Total                  | 71   | 67   | 52   | 39   | 38   | 30   | 4    | 9    | 17   | 20   | 40                      |
| % of all successful takeovers | 20   | 19   | 15   | 11   | 11   | 9    | 1    | 3    | 5    | 6    |                         |

Notes:

Panel A reports the number of successful and unsuccessful takeovers by industry by year for the sample of 1073 firms from 42-industries over the 10-year period, 1986-95. Panel B reports the number of successful takeovers only. A successful takeover is assigned to the year in which the bid went unconditional. An unsuccessful takeover is assigned to the year in which the initial bid was made. Maximum 2-year cluster is the greatest percentage of takeovers occurring in an industry in an adjacent 2-year period.

Table 5  
Divestitures by year

| Industry                      | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | Max 2-year<br>Cluster % |
|-------------------------------|------|------|------|------|------|------|------|------|------|------|-------------------------|
| Non-ferrous metals            | 3    | 1    | 0    | 1    | 0    | 0    | 0    | 0    | 0    | 0    | 80                      |
| Chemicals, advanced           | 0    | 0    | 2    | 1    | 0    | 1    | 0    | 1    | 0    | 0    | 60                      |
| Builders merchants            | 1    | 1    | 5    | 2    | 1    | 0    | 1    | 0    | 0    | 1    | 58                      |
| Clothing & footwear           | 1    | 0    | 3    | 1    | 0    | 1    | 0    | 0    | 0    | 2    | 50                      |
| Engineering contractors       | 1    | 1    | 1    | 0    | 0    | 0    | 0    | 1    | 0    | 0    | 50                      |
| Media agencies                | 1    | 0    | 0    | 1    | 3    | 0    | 0    | 2    | 1    | 0    | 50                      |
| Other businesses              | 1    | 1    | 2    | 2    | 2    | 0    | 0    | 0    | 0    | 0    | 50                      |
| Retail, hard-lines            | 3    | 4    | 1    | 1    | 1    | 0    | 1    | 2    | 1    | 0    | 50                      |
| Software                      | 0    | 1    | 1    | 0    | 1    | 0    | 0    | 0    | 3    | 0    | 50                      |
| Hotels                        | 2    | 1    | 2    | 3    | 4    | 2    | 1    | 0    | 0    | 0    | 47                      |
| Broadcasting                  | 1    | 0    | 0    | 3    | 2    | 1    | 0    | 1    | 1    | 3    | 42                      |
| Rail, road & freight          | 1    | 1    | 2    | 3    | 1    | 0    | 1    | 1    | 2    | 0    | 42                      |
| Other distributors            | 1    | 1    | 0    | 0    | 0    | 1    | 1    | 0    | 0    | 1    | 40                      |
| Pharmaceuticals               | 2    | 2    | 1    | 0    | 1    | 1    | 1    | 0    | 1    | 1    | 40                      |
| Retailers, multi-dept         | 1    | 2    | 2    | 1    | 1    | 0    | 1    | 0    | 0    | 2    | 40                      |
| Other construction            | 3    | 1    | 6    | 2    | 2    | 0    | 1    | 2    | 2    | 2    | 38                      |
| Vehicle distribution          | 1    | 2    | 0    | 1    | 4    | 4    | 0    | 1    | 4    | 4    | 38                      |
| Breweries, pubs & restaurants | 2    | 3    | 5    | 5    | 6    | 2    | 4    | 1    | 0    | 1    | 38                      |
| Leisure facilities            | 4    | 2    | 2    | 1    | 1    | 1    | 1    | 0    | 3    | 1    | 38                      |
| Electrical equipment          | 1    | 3    | 7    | 4    | 3    | 3    | 1    | 1    | 5    | 2    | 37                      |
| Aerospace                     | 0    | 3    | 0    | 6    | 2    | 3    | 4    | 1    | 1    | 2    | 36                      |
| Electronic equipment          | 5    | 5    | 8    | 10   | 8    | 3    | 6    | 1    | 2    | 2    | 36                      |
| Distributors, industrial      | 2    | 2    | 1    | 5    | 1    | 1    | 0    | 1    | 2    | 2    | 35                      |
| Chemicals, commodity          | 0    | 1    | 3    | 5    | 2    | 3    | 4    | 2    | 1    | 2    | 35                      |
| Textiles & leather goods      | 2    | 2    | 4    | 3    | 1    | 5    | 3    | 1    | 1    | 1    | 35                      |
| Diversified industry          | 5    | 6    | 4    | 3    | 3    | 5    | 1    | 3    | 1    | 1    | 34                      |
| Auto parts                    | 3    | 4    | 6    | 5    | 7    | 2    | 2    | 2    | 2    | 2    | 34                      |
| Publishing & printing         | 6    | 5    | 3    | 8    | 5    | 5    | 1    | 3    | 1    | 1    | 34                      |
| Beverages                     | 2    | 2    | 3    | 2    | 2    | 4    | 2    | 0    | 0    | 1    | 33                      |
| Food processors               | 1    | 4    | 0    | 2    | 2    | 1    | 1    | 1    | 1    | 2    | 33                      |
| Medical equipment/supplies    | 1    | 1    | 2    | 2    | 2    | 1    | 1    | 2    | 2    | 4    | 33                      |
| Oil & gas exploration         | 2    | 3    | 2    | 2    | 1    | 1    | 2    | 1    | 3    | 4    | 33                      |
| Retailers, soft goods         | 2    | 2    | 2    | 1    | 3    | 3    | 1    | 3    | 0    | 1    | 33                      |
| Engineering, general          | 20   | 10   | 23   | 24   | 19   | 12   | 4    | 10   | 11   | 12   | 32                      |
| Packaging                     | 2    | 2    | 2    | 2    | 1    | 0    | 1    | 2    | 3    | 1    | 31                      |
| Business support              | 7    | 4    | 8    | 6    | 7    | 4    | 3    | 2    | 2    | 2    | 31                      |
| Furniture & floor-covering    | 3    | 1    | 3    | 1    | 2    | 1    | 1    | 0    | 0    | 1    | 31                      |
| House building                | 2    | 3    | 3    | 2    | 2    | 4    | 1    | 0    | 1    | 2    | 30                      |
| Building materials            | 6    | 8    | 10   | 6    | 7    | 7    | 3    | 6    | 6    | 4    | 29                      |
| Engineering fabricators       | 2    | 2    | 2    | 2    | 1    | 2    | 0    | 0    | 3    | 0    | 29                      |
| Food & drug retailers         | 9    | 11   | 13   | 9    | 10   | 7    | 6    | 6    | 9    | 9    | 27                      |
| Chemicals, speciality         | 2    | 5    | 3    | 3    | 3    | 2    | 6    | 3    | 3    | 4    | 26                      |
| Annual Total                  | 114  | 113  | 147  | 141  | 124  | 93   | 67   | 63   | 78   | 80   | 28                      |
| % of all Divestitures         | 11   | 11   | 14   | 14   | 12   | 9    | 7    | 6    | 8    | 8    |                         |

*Notes:*

The Table reports the number of divestitures by industry by year for the sample of 1073 firms from 42-industries over the 10-year period, 1986-95. A divestiture is assigned to the year in which the seller announces the divestiture. A total of 469 firms made 1020 divestitures over the 10-year period. Maximum 2-year cluster is the greatest percentage of divestitures occurring in an industry in an adjacent 2-year period.

Table 6  
Descriptive statistics

Pool 1 (1986-89)

| Descriptive | Successful takeovers | All takeovers | Divestitures | Sales growth | Sales shock | Emp. Growth | Emp. Shock | FCF   | TECH  | CON   | DERG  | FCOM  | SIZE   |
|-------------|----------------------|---------------|--------------|--------------|-------------|-------------|------------|-------|-------|-------|-------|-------|--------|
| Mean        | 0.161                | 0.191         | 0.580        | 0.250        | 0.137       | 0.226       | 0.233      | 0.122 | 0.021 | 0.210 | 0.071 | 0.286 | 11.520 |
| Median      | 0.078                | 0.138         | 0.643        | 0.235        | 0.102       | 0.187       | 0.181      | 0.120 | 0.003 | 0.177 | 0.000 | 0.000 | 11.566 |
| $\sigma$    | 0.171                | 0.182         | 0.249        | 0.195        | 0.137       | 0.339       | 0.243      | 0.035 | 0.031 | 0.117 | 0.261 | 0.457 | 1.036  |
| Minimum     | 0.000                | 0.000         | 0.021        | -0.425       | 0.010       | -0.681      | 0.002      | 0.039 | 0.000 | 0.054 | 0.000 | 0.000 | 9.532  |
| Maximum     | 0.589                | 0.589         | 0.991        | 0.749        | 0.675       | 1.543       | 1.317      | 0.202 | 0.098 | 0.556 | 1.000 | 1.000 | 13.411 |

Pool 2 (1990-95)

| Descriptive | Successful takeovers | All takeovers | Divestitures | Sales growth | Sales shock | Emp. Growth | Emp. Shock | FCF    | TECH  | CON   | DERG  | FCOM  | SIZE   |
|-------------|----------------------|---------------|--------------|--------------|-------------|-------------|------------|--------|-------|-------|-------|-------|--------|
| Mean        | 0.041                | 0.056         | 0.697        | 0.331        | 0.198       | 0.149       | 0.207      | 0.131  | 0.025 | 0.236 | 0.071 | 0.286 | 12.418 |
| Median      | 0.014                | 0.016         | 0.814        | 0.263        | 0.142       | 0.100       | 0.156      | 0.132  | 0.006 | 0.188 | 0.000 | 0.000 | 12.346 |
| $\sigma$    | 0.067                | 0.094         | 0.269        | 0.307        | 0.233       | 0.313       | 0.232      | 0.082  | 0.079 | 0.148 | 0.261 | 0.457 | 1.143  |
| Minimum     | 0.000                | 0.000         | 0.063        | -0.222       | 0.007       | -0.427      | 0.011      | -0.116 | 0.000 | 0.078 | 0.000 | 0.000 | 10.308 |
| Maximum     | 0.383                | 0.428         | 0.999        | 1.844        | 1.513       | 1.590       | 1.441      | 0.358  | 0.504 | 0.664 | 1.000 | 1.000 | 14.395 |

Notes:

The Table reports descriptive statistics for corporate restructuring proportions (value weighted) and industry characteristics for two samples representing the 1986-89 period (pool 1) and 1990-95 (pool 2). Shock is defined as the absolute difference between an industry's sales growth and the average sales growth across all industries. Sales growth is measured over the 3-year period prior to the sample period (i.e., 1983-85 for pool 1 and 1987-89, for pool 2). FCF is industry average free cash flow, defined as operating cash flow scaled by total assets, measured in the year prior to the sample period. CON is industry sales concentration, defined as the sum of market shares of all firms in an industry (Herfindahl index) in the year prior to the sample period. DERG is a dummy variable, taking the value 1 for all industries impacted by deregulation over the sample period. FCOM is a dummy variable, taking the value 1 for all industries sensitive to foreign competition over the sample period. TECH is the average industry research and development to sales ratio, measured in the year prior the sample period. SIZE is the log of the average industry market value, measured in the year prior to the sample period.

Table 7  
Correlation coefficients

| Pool 1 (1986-89) | Successful takeovers | All takeovers | Divestitures | Sales growth | Sales shock | Emp. Growth | Emp. shock | FCF   | TECH  | CON   | DERG | FCOM  | SIZE |
|------------------|----------------------|---------------|--------------|--------------|-------------|-------------|------------|-------|-------|-------|------|-------|------|
| Succ. takeovers  | 1.00                 |               |              |              |             |             |            |       |       |       |      |       |      |
| All takeovers    | 0.94                 | 1.00          |              |              |             |             |            |       |       |       |      |       |      |
| Divestitures     | -0.32                | -0.21         | 1.00         |              |             |             |            |       |       |       |      |       |      |
| Sales growth     | -0.25                | -0.17         | 0.22         | 1.00         |             |             |            |       |       |       |      |       |      |
| Sales shock      | 0.15                 | 0.11          | -0.34        | -0.18        | 1.00        |             |            |       |       |       |      |       |      |
| Emp. growth      | -0.32                | -0.26         | -0.11        | 0.28         | -0.09       | 1.00        |            |       |       |       |      |       |      |
| Emp. shock       | -0.04                | -0.08         | -0.31        | 0.12         | 0.05        | 0.36        | 1.00       |       |       |       |      |       |      |
| FCF              | -0.18                | -0.13         | 0.24         | 0.43         | 0.15        | 0.05        | -0.15      | 1.00  |       |       |      |       |      |
| TECH             | 0.02                 | 0.00          | -0.07        | -0.05        | -0.04       | -0.13       | -0.25      | 0.15  | 1.00  |       |      |       |      |
| CON              | -0.31                | -0.41         | 0.22         | 0.17         | -0.06       | 0.08        | 0.15       | 0.10  | 0.02  | 1.00  |      |       |      |
| DERG             | -0.12                | -0.16         | -0.28        | -0.22        | 0.37        | -0.36       | 0.23       | 0.00  | 0.09  | 0.08  | 1.00 |       |      |
| FCOM             | 0.24                 | 0.23          | -0.15        | -0.27        | 0.34        | -0.22       | -0.12      | 0.07  | 0.21  | -0.13 | 0.03 | 1.00  |      |
| SIZE             | -0.37                | -0.34         | 0.42         | -0.15        | -0.29       | -0.17       | -0.18      | 0.13  | -0.14 | 0.45  | 0.03 | -0.03 | 1    |
| Pool 2 (1990-95) |                      |               |              |              |             |             |            |       |       |       |      |       |      |
| Succ. takeovers  | 1.00                 |               |              |              |             |             |            |       |       |       |      |       |      |
| All takeovers    | 0.70                 | 1.00          |              |              |             |             |            |       |       |       |      |       |      |
| Divestitures     | -0.37                | -0.57         | 1.00         |              |             |             |            |       |       |       |      |       |      |
| Sales growth     | -0.06                | 0.05          | -0.26        | 1.00         |             |             |            |       |       |       |      |       |      |
| Sales shock      | 0.04                 | 0.04          | -0.14        | 0.62         | 1.00        |             |            |       |       |       |      |       |      |
| Emp. growth      | -0.05                | 0.11          | -0.29        | 0.92         | 0.56        | 1.00        |            |       |       |       |      |       |      |
| Emp. shock       | 0.14                 | 0.17          | -0.16        | 0.58         | 0.89        | 0.55        | 1.00       |       |       |       |      |       |      |
| FCF              | 0.09                 | 0.02          | 0.03         | -0.13        | -0.09       | -0.11       | -0.05      | 1.00  |       |       |      |       |      |
| TECH             | 0.07                 | 0.00          | 0.05         | 0.12         | 0.16        | 0.15        | 0.06       | 0.08  | 1.00  |       |      |       |      |
| CON              | 0.10                 | -0.07         | 0.11         | 0.17         | 0.46        | 0.16        | 0.55       | -0.09 | 0.07  | 1.00  |      |       |      |
| DERG             | 0.26                 | 0.23          | -0.22        | 0.42         | 0.53        | 0.46        | 0.54       | -0.02 | 0.08  | 0.39  | 1.00 |       |      |
| FCOM             | 0.27                 | 0.19          | -0.22        | -0.11        | -0.02       | -0.09       | -0.12      | -0.05 | -0.05 | -0.18 | 0.03 | 1.00  |      |
| SIZE             | -0.23                | -0.29         | 0.56         | -0.11        | 0.08        | -0.04       | 0.14       | -0.01 | -0.08 | 0.46  | 0.20 | -0.10 | 1.00 |

Notes:

The Table reports correlation coefficients for takeover and divestiture proportions (value weighted) and industry characteristics for two samples representing the 1986-89 period (pool 1) and 1990-95 (pool 2). See Table 6 for definitions of the variables.

Table 8

Results of regressing takeover restructuring proportions from 1986-89 and 1990-95 on broad and industry-specific shocks:

| Successful Takeovers (1986-89) |                             |                             |                             |                              |                             |                             |                             |                              |                              | Successful Takeovers (1990-95) |                |                |                |                             |                             |                             |                 |                              |
|--------------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|-----------------------------|-----------------------------|-----------------------------|-----------------|------------------------------|
| Independent variables          | 1                           | 2                           | 3                           | 4                            | 5                           | 6                           | 7                           | 8                            | 9                            | 1                              | 2              | 3              | 4              | 5                           | 6                           | 7                           | 8               | 9                            |
| Constant                       | 0.06<br>(1.27)              | 0.17 <sup>b</sup><br>(2.41) | 0.24 <sup>c</sup><br>(1.72) | 0.23 <sup>a</sup><br>(3.34)  | 0.15 <sup>a</sup><br>(4.58) | 0.11 <sup>b</sup><br>(2.49) | 0.14 <sup>a</sup><br>(3.28) | 0.93 <sup>b</sup><br>(2.43)  | 1.06 <sup>a</sup><br>(2.73)  | 0.26<br>(0.90)                 | 0.15<br>(0.62) | 0.18<br>(0.41) | 0.08<br>(0.30) | 0.21<br>(1.10)              | 0.21 <sup>b</sup><br>(2.14) | 0.44 <sup>c</sup><br>(3.27) | 0.28<br>(1.46)  | 0.38 <sup>a</sup><br>(2.79)  |
| Shock                          | 0.69 <sup>c</sup><br>(1.60) |                             |                             |                              |                             |                             |                             |                              | 0.44<br>(0.16)               | 0.11<br>(0.07)                 |                |                |                |                             |                             |                             |                 | -0.44<br>(0.66)              |
| Growth                         |                             | -0.13<br>(0.67)             |                             |                              |                             |                             |                             |                              | -0.22<br>(1.19)              |                                | 0.21<br>(0.54) |                |                |                             |                             |                             |                 | -0.58<br>(1.23)              |
| FCF                            |                             |                             | -0.84<br>(0.82)             |                              |                             |                             |                             |                              | -0.21<br>(0.21)              |                                |                | 0.75<br>(0.30) |                |                             |                             |                             |                 | 0.72<br>(0.55)               |
| CON                            |                             |                             |                             | -0.41 <sup>c</sup><br>(1.80) |                             |                             |                             |                              | -0.97<br>(0.34)              |                                |                |                | 0.10<br>(0.66) |                             |                             |                             |                 | 0.18 <sup>c</sup><br>(1.92)  |
| DERG                           |                             |                             |                             |                              | -0.17<br>(1.23)             |                             |                             |                              | -0.20<br>(1.49)              |                                |                |                |                | 0.82 <sup>a</sup><br>(2.72) |                             |                             |                 | 0.12 <sup>b</sup><br>(2.37)  |
| FCOM                           |                             |                             |                             |                              |                             | 0.11 <sup>c</sup><br>(1.64) |                             |                              | 0.90<br>(1.36)               |                                |                |                |                |                             | 0.34<br>(0.65)              |                             |                 | 0.46 <sup>c</sup><br>(1.89)  |
| TECH                           |                             |                             |                             |                              |                             |                             | -0.14<br>(0.12)             |                              | -0.84<br>(0.85)              |                                |                |                |                |                             |                             | 0.53<br>(0.56)              |                 | 0.47<br>(0.36)               |
| SIZE                           |                             |                             |                             |                              |                             |                             |                             | -0.07 <sup>b</sup><br>(2.08) | -0.71 <sup>b</sup><br>(1.97) |                                |                |                |                |                             |                             |                             | -0.19<br>(1.36) | -0.32 <sup>a</sup><br>(2.90) |

*Notes:*

The Table reports Tobit regressions (heteroscedastic) of successful takeover value weighted proportions on measures of industry shocks and other characteristics. The regressions are estimated on separate pools, representing the 1986-89 period (pool 1) and the 1990-95 period (pool 2). Shock is defined as the absolute difference between an industry's sales growth and the average sales growth across all industries. Sales growth is measured over the 3-year period prior to the sample period (i.e., 1983-85 for pool 1 and 1987-89, for pool 2). FCF is industry average free cash flow, defined as operating cash flow scaled by total assets, measured in the year prior to the sample period. CON is industry sales concentration, defined as the sum of market shares of all firms in an industry (Herfindahl index) in the year prior to the sample period. DERG is a dummy variable, taking the value 1 for all industries impacted by deregulation over the sample period. FCOM is a dummy variable, taking the value 1 for all industries sensitive to foreign competition over the sample period. TECH is the average industry research and development to sales ratio, measured in the year prior the sample period. <sup>a,b,c</sup> denotes statistical significance at the 1%, 5% and 10% respectively, using a two-tail test.

Table 9

Results of regressing divestiture restructuring proportions from 1986-89 and 1990-95 on broad and industry-specific shocks:

| Divestitures (1986-89) |                              |                             |                             |                             |                              |                 |                             |                             |                              | Divestitures (1990-95)      |                             |                             |                             |                             |                             |                             |                             |                              |  |
|------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|-----------------|-----------------------------|-----------------------------|------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|--|
| Independent variables  | 1                            | 2                           | 3                           | 4                           | 5                            | 6               | 7                           | 8                           | 9                            | 1                           | 2                           | 3                           | 4                           | 5                           | 6                           | 7                           | 8                           | 9                            |  |
| Constant               | 0.66 <sup>a</sup><br>(11.3)  | 0.46 <sup>a</sup><br>(9.03) | 0.44 <sup>b</sup><br>(2.39) | 0.48 <sup>a</sup><br>(5.30) | 0.60 <sup>a</sup><br>(13.3)  | 0.60<br>(13.6)  | 0.55 <sup>a</sup><br>(9.07) | -0.68<br>(1.44)             | -0.68<br>(1.39)              | 0.72 <sup>a</sup><br>(7.81) | 0.78 <sup>a</sup><br>(6.98) | 0.72 <sup>a</sup><br>(6.54) | 0.66 <sup>a</sup><br>(6.61) | 0.71 <sup>a</sup><br>(12.5) | 0.73 <sup>a</sup><br>(12.7) | 0.67 <sup>a</sup><br>(11.2) | -0.92<br>(1.40)             | -1.10 <sup>a</sup><br>(2.94) |  |
| Shock                  | -0.61 <sup>b</sup><br>(2.20) |                             |                             |                             |                              |                 |                             |                             | -0.48<br>(0.12)              | -0.13<br>(0.39)             |                             |                             |                             |                             |                             |                             |                             | 0.11<br>(0.56)               |  |
| Growth                 |                              | 0.49 <sup>b</sup><br>(2.41) |                             |                             |                              |                 |                             |                             | 0.19<br>(0.92)               |                             | -0.26<br>(0.93)             |                             |                             |                             |                             |                             |                             | -0.12<br>(0.91)              |  |
| FCF                    |                              |                             | 1.18<br>(0.83)              |                             |                              |                 |                             |                             | 0.62<br>(0.44)               |                             |                             | -0.71<br>(0.11)             |                             |                             |                             |                             |                             | -0.42<br>(0.12)              |  |
| CON                    |                              |                             |                             | 0.46<br>(1.17)              |                              |                 |                             |                             | 0.23<br>(0.37)               |                             |                             |                             | 0.18<br>(0.54)              |                             |                             |                             |                             | -0.25<br>(0.95)              |  |
| DERG                   |                              |                             |                             |                             | -0.27 <sup>b</sup><br>(2.29) |                 |                             |                             | -0.25 <sup>a</sup><br>(2.57) |                             |                             |                             |                             | -0.23<br>(1.48)             |                             |                             |                             | -0.30 <sup>b</sup><br>(2.13) |  |
| FCOM                   |                              |                             |                             |                             |                              | -0.80<br>(0.80) |                             |                             | -0.12<br>(1.58)              |                             |                             |                             |                             |                             | -0.13<br>(1.13)             |                             |                             | -0.10<br>(1.52)              |  |
| TECH                   |                              |                             |                             |                             |                              |                 | 0.80<br>(0.11)              |                             | -0.24<br>(0.17)              |                             |                             |                             |                             |                             |                             | 0.27<br>(0.25)              |                             | 0.44<br>(1.14)               |  |
| SIZE                   |                              |                             |                             |                             |                              |                 |                             | 0.11 <sup>a</sup><br>(2.57) | 0.10 <sup>c</sup><br>(1.88)  |                             |                             |                             |                             |                             |                             |                             | 0.13 <sup>b</sup><br>(2.42) | 0.16 <sup>a</sup><br>(5.09)  |  |

*Notes:*

The Table reports Tobit regressions (heteroscedastic) of divestiture value weighted proportions on measures of industry shocks and other characteristics. The regressions are estimated on separate pools, representing the 1986-89 period (pool 1) and the 1990-95 period (pool 2). Shock is defined as the absolute difference between an industry's sales growth and the average sales growth across all industries. Sales growth is measured over the 3-year period prior to the sample period (i.e., 1983-85 for pool 1 and 1987-89, for pool 2). FCF is industry average free cash flow, defined as operating cash flow scaled by total assets, measured in the year prior to the sample period. CON is industry sales concentration, defined as the sum of market shares of all firms in an industry (Herfindahl index) in the year prior to the sample period. DERG is a dummy variable, taking the value 1 for all industries impacted by deregulation over the sample period. FCOM is a dummy variable, taking the value 1 for all industries sensitive to foreign competition over the sample period. TECH is the average industry research and development to sales ratio, measured in the year prior the sample period. <sup>a,b,c</sup> denotes statistical significance at the 1%, 5% and 10% respectively, using a two-tail test.