

# Public to Private Transactions, Private Equity and Performance in the UK: An Empirical Analysis of the Impact of Going Private

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# **Public to Private Transactions, Private Equity and Performance in the UK: An Empirical Analysis of the Impact of Going Private**

## **Abstract**

Using a hand collected data set of 122 buy-outs, this paper presents the first analysis of the impact effects of public to private transactions in the UK during a period (1998-2004) in which PTPs have become a significant part of the market for corporate control. We find that performance deteriorates relative to the pre-buyout situation but firms do not perform worse than firms that remain public and there some evidence that performance improves. A similar outcome applies to deals backed by PEPs, however there is no evidence that non-PEPs perform better than the industry average. We find that contrary to expectations, PEP involvement appears to have a negative effect on the change in profitability relative to the situation prior to the deal but this was explained by the fact that PEPs were involved in the largest deals and these had the poorest performance. PEPs performed better than the industry average and no worse than non-PEP deals. PTPs experienced job losses in the years immediately after going private but employment increased subsequently. PEP deals incurred job losses each year while non-PEP deals increased employment increases after the first year post-deal. PTP tax liability falls but this is at least partly caused by the fall in profitability relative to the year before going private. Expenses were also found to be lower after going private and profit per employee higher, indicating increased efficiency. We also find improvements in the z-scores of firms going private with deals involving PEPs achieving significant improvements in their financial health. These results are driven by improvements in efficiency (lower expenses) and an increase in liquidity. The overall impression is one in which PTPs create value by improvements in efficiency and divestment but that this is not being picked up by the traditional accounting based measures of profitability

## **Public to private transactions, private equity and performance in the UK: An empirical analysis of the impact of going private**

### **1. Introduction**

A public to private transaction (PTP) involves bidding for a publicly quoted company, usually by a newly incorporated unlisted company specifically set up for the purposes of the deal (Jensen, 1993). The bid often takes the form of a leveraged buyout (LBO) which is financed by a mixture of share capital and/or loan notes from a private equity provider and a management team, as well as a high level of borrowing, typically using the assets of the buyout vehicle as security. The final capital structure generally consists mainly of debt and a small amount of equity. LBOs can take two broad forms. Management buyouts (MBOs) involve the acquisition of a company by the incumbent management team, often supported by private equity investment and/or bank debt financing. Management buyins (MBIs) occur when a management group from outside the company lead the acquisition.

Since the beginning of the 1990s, there has been a significant increase in the number and value of PTPs worldwide (Wright et al., 2007). In the UK in 1991 there were 6 PTPs, each with an average value of £9.5 million. By 2000, the figure had risen to 42 with the average value being £222.9 million per deal. By 2003, the figure had fallen to 36 and the average value per deal to £106.6 million. In addition, the value of deals increased from £57m in 1991 to £3,838m in 2003 (CMBOR, 2007). In contrast, UK MBO/MBI activity has shown a steady increase in numbers, 581 in 1991, 622 in 2000 and 712 in 2003 with the average value per deal rising from £5m in 1991 to £22.9m in 2003. The total value of MBOs/MBIs was £2,916m in 1991 and £16,304m by 2003, CMBOR (2007). UK PTPs are therefore, on

average, much larger than other forms of MBOs/MBIs, such as buy-outs of divisions and private firms, and their total value has increased much more quickly. The increase in PTP activity in the late 1990s also occurred in the US, (Guo, Hotchkiss and Song, 2007) and in Europe (Andres et al., 2007).

There is evidence that PTPs have distinct characteristics that separate them from other takeovers of quoted companies (Weir and Wright, 2006). These include, first, that the company's equity is purchased and is no longer quoted on the stock market but is taken private. The result is that the company usually continues to trade independently rather than disappear as is the case with a normal takeover. Second, the new organisational structure has different governance mechanisms, usually involving a significant increase in debt which ensures improved monitoring. Third, the new management usually have an increased ownership stake in the new firms. Fourth, many PTPs involve private equity providers.

A number of studies have investigated the factors that influence the decision to go private (Cumming, Siegel and Wright, 2007). In relation to the US, Lehn and Poulsen (1989) found that firms involved in leveraged buyouts (a term usually synonymous in the US with PTPs) had higher free cash flows than firms remaining public. However, both Opler and Titman (1993) and Kieschnick (1998) found no evidence of excess free cash flows. Kaplan (1989) reported that LBOs paid more tax and would benefit from going private because they were more likely able to cope with the increase in debt incurred in an LBO. Halpern et al (1999) and Lehn and Poulsen (1989) found that firms going private were more likely to experience the threat of takeover.

UK studies have found that the likelihood of going private, relative to remaining public, is influenced by growth prospects and governance mechanisms (Weir et al., 2005a; Renneboog et al., 2007) and undervaluation (Weir et al., 2005b). Further, Weir and Wright (2006) showed that firms going private had different characteristics from other acquired firms during a period of non-hostile takeovers.

The agency model provides a context within which to evaluate the outcomes of PTPs. Jensen (1986, 1993) argues that leveraged buyouts provide the means by which agency costs will be reduced. These include increased debt, with the resultant increase in interest payments, which means that managers cannot pursue discretionary policies by investing in negative net present value projects (Nikoskelainen and Wright, 2007). Increased debt means that companies must generate sufficient cash to service the higher interest payments or risk the company failing. This reduces the ability of management to expropriate any free cash flows because it has to be used to cover the increased interest payments. In addition, deals are usually structured such that debt has to be paid off within a relatively short period of time and is converted into increased managerial equity ownership. This provides a further incentive to minimise agency costs. Finally, as Kaplan (1991), Wright, Thompson, Robbie and Wong (1995), Cotter and Peck (2001) and Cressy et al. (2007) argue, the presence of buyout specialists, such as private equity providers (PEPs), provide an additional source of close monitoring because they usually have a relatively short exit strategy.

There is an extensive literature on post-LBO performance, most of it relating to the first LBO boom which took place in the US during the 1980s. A number of US studies have found improved performance post-buyout for LBOs including: Kaplan (1989), Smith (1990),

Opler (1992), Smart and Waldfogel (1994) and Zahra (1995). Muscarella and Vetsuypens (1990) and Singh (1990) also found improved performance when analysing US reverse LBOs. Further, Holthausen and Larcker (1996) found that firms involved in reverse leveraged buyouts outperformed the industry average in the post-going public period (see also Jelic, Saadouni and Wright, 2005 and Cao and Lerner, 2007). Their results suggest that the benefits of going private persist. They argue that although debt and managerial ownership decline after going public, they remain above the industry average and so maintain the incentives and monitoring benefits gained as a private company. These results were supported by Bruton et al (2002) who also found evidence that profit margins increased post-buyout but did not find evidence of declines when the firm returned to the market until three years after the return.

This paper makes a number of contributions to the literature. First, while there is a significant literature on buyouts in general (see Wright and Gilligan, 2007, for a review), in spite of the increasing importance of PTPs since the late 1990s, there has been relatively little recent analysis of their consequences for performance. Only one US study, Duo, Hotchkiss and Song (2007), deals specifically with post-PTP performance. They found that post-deal performance improved in the two years following the deal. The result was dependent on the method of matching and did not extend to the following year. This paper is the first to analyse the impact of UK PTPs and adds to emerging analysis of the impact of the second wave of buyouts and private equity backed deals. This analysis is especially important given the evidence that the characteristics and antecedents of the current wave of PTPs is different from those that took place in the 1980s and that UK PTPs have some differences from those in the US (Weir et al., 2005a, b; Renneboog et al., 2007).

Second, most studies have used relatively small samples, for example, Opler (1992) had 42 firms, Cotter and Peck (2001) analysed 64 deals and Kaplan (1989) used 76 transactions. Finally, Kosedag and Lane (2002) analysed a sample of 21 US re-LBOs – when firms go private and then return to the market and finally go private again. Our study uses a sample of 122 public-to-private transactions covering the period 1998-2004. We therefore believe that this adds to the significance of the findings.

Third, as UK private firms, unlike those in the US, are required to report financial results, we are able to use the full population of PTPs where data are available. This avoids potential biases that may arise from relying on data relating to pre-reverse LBO performance for the subset of firms that return to market.

Fourth, Kaplan (1991), Wright, Thompson, Robbie and Wong (1995), and Cotter and Peck (2001) argue, the presence of buyout specialists, such as private equity providers (PEP), provide an additional source of close monitoring because they usually have a relatively short exit strategy. In addition, there has been considerable controversy about the consequences of private equity involvement in going private deals (Treasury Select Committee, 2007). This paper provides the first analysis of the impact of PEPs on the performance of public to private transactions in the UK.

The paper is structured as follows. Section 2 gives details of the data. Section 3 reports the results relating to industry comparators. Section 4 presents findings comparing pre and post PTP performance. Section 5 develops the analysis of comparisons between Private equity

partnership (PEP) and non-PEP backed deals. Section 6 develops the analysis on the determinants of differences in performance. Section 7 analyses the financial health of the companies going private. Finally, section 8 presents the conclusions.

## 2. Sample and Variables

The initial sample is drawn from data held by the Centre for Management Buyout Research (CMBOR) at Nottingham University and comprises 219 deals that were undertaken between 1998 and 2004. The CMBOR database contains the population of LBOs in the UK. The availability of post-PTP financial data was then checked by means of the FAME database. At least three years data were required, from t-1 to t+1, which would ensure some pre and post-deal comparisons. As a result 97 companies had to be excluded on the grounds of insufficient post-deal data. There were a number of reasons for this, including firms not lodging their accounts and name changes making it impossible to track a company. This resulted in a final sample of 122 companies. The nature of the distribution of this sample across both industries and time is detailed in Table 1.

Insert Table 1

Table 1 panel A demonstrates that the majority of the companies (99 or 81 per cent) are classified under three broad industry divisions namely: *Manufacturing* (29.5 per cent); *Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods* (20.5 per cent) and *Real Estate, Renting and Business Activities* (31.1 per cent). Panel B details the distribution of the sample deals over time and it is evident that the majority (68 per cent) occur during the period between 1999 and 2001.

Insert table 2



The financial variables employed in this study are selected in order to reflect the traditional dimensions of performance evaluation within the constraints of data availability. The precise constructs are detailed in Table 1C. Thus, *profitability*<sup>1</sup> is measured by means of three ratios namely: return on capital employed (ROCE); return on equity (ROE) and earnings before interest, tax, depreciation and amortization to total assets (EBITDATA). In all cases the earnings figures are adjusted in order to take account of exceptional items, both costs and revenues, which can have a significant impact at times of major restructuring.

Secondly, overall *indebtedness* is measured by means of the ratio of total debt to total assets with the former comprising both short- and long-term loans. In addition, the composition of the debt portfolio is also examined by assessing the relative significance of short term debt. The tax liability of the company deflated by the book value of equity is included on the grounds that the potential tax savings associated with buyouts could be an important consideration.

As the governance mechanisms introduced on buyout to address agency cost problems may lead to the search for cost reductions and the best use of assets (Jensen, 1993), three efficiency measures are used. Profit per employee and expenses<sup>2</sup> to total assets are used to order to evaluate *efficiency* and, as above, the after-tax profit figure has been adjusted for exceptional items. In terms of the *activity* measures, total asset turnover is used as an indicator of managerial efficiency. *Growth* is evaluated by the year-on-year changes in both employment and fixed assets with the latter also being used as a proxy for the value of non-replacement capital investment.

In addition to these financial variables, two non-financial variables are also employed: the percentage of director resignations in the six-months before, and the six months after the deal and a premium dummy which measures whether a premium or discount was paid for the company (see section 3.ii below for discussion).

To control for industry effects, the industry median was calculated for all financial variables.<sup>3</sup> The firms included in the comparison were those that had remained public and were in the same 3 digit SIC group at the time the company went private. Where too few firms were present, 2 digit SIC firms were used. Given that the objective is to evaluate the change in the financial characteristics of the firms, it was decided that comparisons with firms remaining public provided the most appropriate base against which to measure any changes.

### **3. Performance outcomes.**

This section analyses a number of financial and performance characteristics of PTPs relative to industry averages.<sup>4</sup> These include profitability, debt, tax, expenses, profit per employee, sales to assets, the change in employment and the change in fixed assets. The variables are taken from the literature discussed previously and represent an in-depth tracking of key indicators in the PTP literature.

#### **(i). Trend**

Table 3 reports the results for three profitability measures ROCE, ROE and EBITDA. Reading along the rows, all three profitability figures were lower relative to t-1 for each of the post PTP years. The Z statistics for the PTP t-1 to t+n row shows whether there are any differences in the pre and post-deal figures. They show that both ROCE and ROE had significantly lower profitability for four of the post-deal years with EBITDA being

significantly lower for all years. These results suggest that firms going private performed more poorly in terms of accounting performance relative to their performance before going private.

### **Insert Table 3**

However, when industry effects are taken into account, we find a more mixed picture. In terms of capital employed, ROCE, firms going private significantly outperformed the industry median of remaining public firms in three years, t-1 and t+2. In t+1, however, they had a lower ROCE. In the later years, beyond t+2, the performance differences were not statistically different.

Whereas ROCE measures profitability before deductions, the return on equity, ROE, represents the situation after tax and interest payments and indicates the profit available to shareholders. It may therefore be more important to private equity providers than ROCE. Table 3 shows that firms going private outperformed the industry average in the year prior to going private. However, with the exception of t+2 when the figure was significantly lower, in each of the years there is no significant difference in the ROE of the two groups.

The EBITDA figures show a similar pattern with significantly better performance in t-1, but poorer performance in some of the later years, t+1 and t+3). However in the other post-deal years the performance was not different from the industry average.

The initial evidence therefore indicates that firms going private experienced a deterioration in performance relative to their situation before going private. They also outperform the industry average prior to the change in status but there is limited evidence of superior post-

deal performance. Most of the results show performance to be no different to the industry median but is occasionally worse.

We further examine the impact on profitability by analysing the percentage of firms that improved performance relative to their pre-deal situation. This is consistent with the agency perspective that the firms underperform before going private. It is also consistent with the view that the buyers have private information which leads them to believe that performance will improve given a change in organisational status. Success is measured by a dummy variable that has the value 1 if industry adjusted performance in year  $t+n$  is better than in  $t-1$  where  $t+n$  is 1, 2, 3, 4 and 5 years post going private and  $t-1$  is one year before going private. If the performance is worse, it has the value 0. The performance variables used are raw, and industry adjusted ROCE, ROE and EBITDA. .

#### INSERT Table 4

Table 4 reports the percentage of PTP transactions that resulted in improved profitability, as defined by success above, relative to firms that remained public in the year prior to the transaction. It therefore provides an important insight into the extent to which the expected improvement in performance is realised.

There is evidence of improved short term performance with the percentage showing relatively higher profitability increasing in years  $t+1$  and  $t+2$  for the ROCE and ROE measures. By  $t+2$ , 52.5% of firms have better performance, higher ROCE and higher ROE, than in the year before going private. The figure for EBITDA peaks at 39.5% also in  $t+2$ . There is therefore evidence of short term improvements in performance. In subsequent years, the figure falls and is 42.3% for ROCE, 43.6% for ROE and 30.6% for EBITDA by

year t+5. If the year of the transaction is excluded, because of potential accounting changes that may affect the usefulness of the figures, we find that, on average, in the five years after going private 45% of firms (using ROCE and ROE) improve their industry relative performance. The figure is lower for EBITDA, 32%.

The results in Table 4 therefore show limited evidence that industry adjusted performance improves in the post deal years. On average fewer than one half of firms experience an improvement in either ROCE or ROE and only around one third of firms achieve better EBITDA.

**(ii). Determinants of performance changes**

The multivariate analysis<sup>5</sup> reported in Table 5 tests the extent to which post going private performance can be explained by deal characteristics. The dependent variables are defined as follows -

(a) ROCE is earnings before interest and tax less exceptional items deflated by capital employed. It is adjusted for industry effects by subtracting the 2 digit industry median figure for firm's remaining public from the individual firm's figure. A dummy variable was constructed which took the value 1 if ROCE in year t+n was higher than in t-1. If lower, it was 0.

(b) ROE is profit after tax less exceptional items deflated by shareholders' equity. It is adjusted for industry effects by subtracting the 2 digit industry median figure for firm's remaining public from the individual firm's figure. A dummy variable was constructed which took the value 1 if ROE in year t+n was higher than in t-1. If lower, it was 0.

Logistic regression was therefore used. Regressions were also run with EBITDA as the dependent variable but in all cases the regression equations were insignificant. They are therefore not reported here.

The independent variables used in the analysis are defined as follows –

(a) PEP – is a dummy variable which has a value of 1 if a private equity provider was involved in the deal and 0 if not. The expected coefficient is positive because of the additional expertise they bring to the business, (Cressy et al., 2007a). It is also expected that, given their financial commitment to the business, they will be effective monitors, (Cotter and Peck, 2001; Nikoskelainen and Wright, 2007).

(b) Resign – is the percentage of directors resigning within the period six months before and six months after the firm going private. This is a proxy for poor management so we propose that the greater the percentage of the board leaving, the better the subsequent performance. We therefore expect a positive coefficient. However, if the proportion of directors leaving is too large, the firm may lose company-specific assets that have detailed knowledge about the business, (Lei and Hitt, 1995). The loss could have short term negative effects on performance as the new board members take time to settle in. In this case, the coefficient will be negative.

(c) MBO – is a dummy variable which takes the value 1 if the deal was a management buy-out and 0 if it was not. Weir et al (2005) found that management's perception that the market undervalues the company, relative to the performance of its competitors explained MBO public to private transactions. Consistent with this, we would not expect any effect on accounting performance post going private because management's perception is that it is performing well already. In contrast, non-MBO transactions are likely to improve

profitability because outside management perceive the target to be underperforming. The coefficient is therefore expected to be negative.

(d) Premium – is a dummy variable that has the value 1 if a premium was paid for the firm's shares and 0 if it was a discount. A discount suggests that the company is in poor financial condition and that the sellers are keen to sell. Buyers must weigh the potential gains to be made from turning the firm around with the costs of failing. Weir et al (2008) find evidence that, in the UK, potential financial distress costs do not appear to be an important determinant of going private. Therefore, firms bought at a discount offer greater opportunities for gains and better performance. This implies that the coefficient should be negative.

#### INSERT Table 5

The results show that short term changes in performance can be explained by the model. Contrary to expectations we find that one year after going private that deals involving private equity providers were less likely to see an improved performance relative to the year before the deal. For each of the other years the coefficient remains negative but insignificant. This holds for both profitability measures. This result is further analysed in the next section.

We also find, consistent with the loss of human capital hypothesis, that firms are less likely to earn above industry profitability the greater the percentage of directors that leave around the time of going private.<sup>6</sup> This occurs after one year for ROCE and after three years for ROE. The insignificant MBO variable shows that the type of buyout does not affect future performance. Given that we might expect outside management (i.e., MBI deals) to improve a company's performance, this implies that existing management teams are performing as well as new management. This is consistent with the market undervaluation hypothesis given that

MBIs do not lead to better performance. The insignificant PREMIUM variable shows that there is no evidence that firms bought at a discount produce better performance in subsequent years.<sup>7,8,9</sup>

### **(iii). Debt and tax**

Insert Table 6

In Table 6 the results for the firms' debt and tax positions are reported. Since PTPs are argued to be financed by significant amounts of debt (Wright et al., 2007, Axelson et al., 2007), we would expect to see a significant increase in firms' indebtedness in the years after going private. In terms of total debt to assets, we find that for years t-1 to t+1, firms going private increase their TDTA ratios from 21.30% to 31.84% whereas the change in the industry median was only from 20.17% to 22.93%. Thus in t-1 firms going private had, on average, debt 5% higher than the industry average but by year t+1 it was 39% higher than the industry average. The increase in the proportion of debt employed by PTPs is further shown by the fact that there was no difference in the industry relative debt in t-1 but for each of the five post-PTP years, firms going private had significantly higher debt to asset ratios.

We also find that total debt to assets is significantly higher in each of the post-deal years relative to t-1. These outcomes are consistent with a number of studies, for example, Kaplan (1989), Muscarella and Veststuyens (1990) and Cotter and Peck (2001) which suggests that the benefits of the increased use of debt outweigh the potential costs of default. They also support Weir, Wright and Scholes (2008) who find that only 5% of firms involved in PTPs failed within five years.



The table also shows that the structure of the debt changes significantly over the period. There is a significant increase in the short-term debt to total debt ratio for the company from 30.95% to 97.50% for years t-1 and t+1 respectively. The figure for each post-deal year is significantly higher than in t-1. In addition, the percentage of short term debt is significantly above the industry average for each post-deal year which puts two forms of pressure on the management. First, they must generate of cash flows to meet the interest repayments and second, it also creates additional pressure to generate the funds necessary to pay off the debt as it matures. Although not reported here, the same results were found using debt to equity ratios.

In relation to tax, Kaplan (1989) argues that firms should be able to reduce their tax liabilities because they can offset the debt interest payments against tax. As Table 6 shows, firms increase their relative debt after going private suggesting that they should benefit from lower tax liabilities. We find that the reduction in the tax/equity ratio for the company from 4.06 in t-1 to 0.21 in t+1 is statistically significant as is the reduction for each of the other post-deal years relative to t-1. In addition, Table 6 shows that tax paid as a proportion of shareholders' equity is significantly below the industry average in each of the years in the post-deal period but is not statistically different in the year prior to going private. The latter supports Weir et al (2005a) who found no difference in tax paid in the pre-going private period. These results provide support for the tax benefits after going private.

However, the reduction in tax may also be driven by the results reported in Tables 3 and 4 which show that profitability falls in the period after the deal. Therefore, the lower tax may

also be a function of lower profitability rather than from the tax shield element associated with the structure of the funding package. Thus the causation appears to go from profit to tax liability rather than from tax liability to profit

**(iv). Efficiency changes**

In table 7 results for three measures of efficiency are reported, expenses to total assets, profit per employee and sales to total assets. Harris, Siegel and Wright (2005) find that plant level productivity improves post-buyout. An important potential source of increased efficiency is a reduction in costs. Bruton et al (2002) find evidence of lower expenses for re-LBOs during the private period. The companies experienced a significant reduction in their expenses ratio from a median of 22.12% in t-1 to 4.93% in t+1. The other post-deal years also showed significantly lower expenses relative to year t-1. In each of the years after going private, firms had significantly lower expenses ratios relative to the industry average. In addition, there was no difference in the year before going private. These results suggest that, although initially not high expense firms, firms going private found effective ways in which to improve the efficiency of the companies by cutting unnecessary expenditure.

**Insert Table 7**

It is shown that profit per employee is significantly higher than t-1 for years t+2, t+4 and t+5. The other years are higher but not significantly so. Therefore firms going private improve the labour productivity of the workforce in terms of generating improved after-tax profitability.

However, a different picture is presented with the sales to assets ratio. Table 7 also shows that firms going private had significantly lower ratios for each of the years t+1 to t+5 relative

to the industry median and relative to t-1. Thus firms going private were less effective in producing revenues from their available assets.

#### **(v). Employment**

One often quoted concern about PTPs is that they lead to substantial job losses in the years after going private. However, the evidence presents a more complex picture. Opler (1992) found some small post-LBO increases, a finding supported by Kaplan (1989) and Smith (1990) but when industry effects were taken into account, employment fell. Muscarella and Vestuypens (1990) reported that employment increased during the private phase of reverse LBOs. A number of studies dealing with UK MBOs and MBIs, for example Wright, Thompson and Robbie (1992) and Wright et al (2007) found initial reductions followed by subsequent increases.

#### **Insert Table 8**

The impact on employment is assessed by means of the percentage change in employment for each of the years. Table 8 shows that there is no evidence that firms shed jobs in the pre-deal period. In t-1, firms involved in PTPs created employment in line with the industry on average. However, relative to firms that remained public, there is evidence of significantly greater job losses in t+1. In t+2, firms involved in PTPs reduced employment but the rate was significantly slower than the experienced by firms remaining public . In addition, there is no significant difference in the changes in employment in t+3, t+4 and t+5. It should also be noted that in the t+4 and t+5, firms remaining public tended to shed jobs whereas those that had gone private did not.

The picture in relation to the change in employment is therefore quite complex.. In addition to the above, there is some evidence of increases in employment after the reduction in the first year post PTP. In year t+2, 39.4% of firms had employment levels higher than in t+1. The figures were 47.9%, 47.0% and 41.2% in years t+3, t+4 and t+5 respectively. The results are similar to the MBO/MBI findings of Wright, Thompson and Robbie (1992), Amess and Wright (2007a,b), Wright et al (2007), Cressy et al. (2007b) and Davis et al., (2008) who used broad samples of buyouts, and suggest that after the initial job losses, employment does increase but not back to the pre-going private levels.

The overall effect of going private on employment is unclear given that reductions in firm-level employment do not necessarily mean that the jobs are lost. Specifically, if assets are sold, another firm takes responsibility for them and by definition jobs are reduced at the selling firm. If the objective of going private is to improve efficiency it is not unexpected that employment will fall after going private. However, it may be that the new owner of the assets will retain or increase employment if the purchase is a success. We do not have the data to examine this aspect.

#### **(vi). Assets**

Within a neo-classical maximisation framework, selling assets comes about when the costs of maintaining the present business set-up are greater than the benefits to be gained from changing it. Assets may thus be closed or sold to a buyer who believes they can make better use of them. If divestment takes place, we would expect there to be a fall not just in employment as shown above, but also a fall in the fixed assets owned by the companies. We test this by looking at the change in fixed assets.

Table 8 shows that the firms experienced a significant reduction in fixed assets from t-1 to t+1, t+2 and t+3. In addition, in relation to the industry average, there is evidence that firms going private experienced significant percentage falls in assets in t+1 and t+2 whereas firms remaining public increased their fixed assets. In addition, there is no evidence that PTPs lead to increases in fixed assets in subsequent years whereas firms remaining public did. Both these results are consistent with a programme of divestment and provide a possible explanation for the fall in employment.

## **5. Private Equity**

### **(i). Trend analysis**

In this section we further analyse the unexpected result reported in Table 5, that private equity providers (PEPs) have a negative impact on performance post-going private. Cotter and Peck (2001) argue that the equity stake held by PEPs gives them a financial incentive to undertake active monitoring of the board. The greater the proportion of debt used in the financing of the PTP, the lower the proportion of equity. This allows PEPs, and management, to increase their equity stake which provides PEPs with the incentive to monitor the board. The combination of financial incentives and increased debt should therefore improve performance.

The analysis is developed two ways. First, two comparisons were made,, one comparing PEP deals with the industry average and the other comparing non-PEP deals with the industry average. Second, the performance of PEP deals was compared with that of non-PEP deals.

Insert Table 9

Table 9 shows that, using ROCE, PEPs were involved with going private transactions with firms that significantly outperformed the industry average in the year before going private. Over the period there is mixed evidence that this superior initial position continues. Only in t+2 are returns significantly above the industry average. For each of the other years the performance, although worse, is not significantly different. However, if we look at the PTP performance in isolation, ROCE is significantly lower in t+1, t+3, t+4 and t+5 than in t-1. These results suggest an absolute and relative decline in performance after going private for deals involving PEPs.

A similar picture emerges with ROE. We again find ROE is highest in the year prior to going private and it is also higher relative to firms remaining public in t-1. As with ROCE, only in year t+2 do firms going private outperform those remaining public. Relative to the year before going private, ROE is significantly lower in t+1, t+3 and t+4.

The EBITDA figures also show that PEP deals have significantly lower performance in each year relative to t-1. With the exception of t+4, there is no evidence that the figures are lower than the industry average. These traditional accounting measures of performance do not therefore show an improvement post-PTP for deals involving PEPs. However, the evidence also shows that, in general, they perform no worse than the industry average.

Table 9 also reports the results for performance changes in PTPs that did not involve a private equity provider. The results are similar in that ROCE is lower in each post PTP year. However, only in year t+2 is the difference significant. In addition, in the year prior to going private, non-PEP firms did not underperform the industry average. A similar situation

applies to the ROE results with ROE falling in each post-PTP year but the difference only being significant in t+3. The EBITDA results also show declining post-deal performance but the decline is longer term and occurs in t+3 and t+5. Other years are insignificant.

In terms of their relative performance, Table 9 shows that there is no evidence that PEPs improve performance relative to deals that do not involve PEPs. In relation to ROCE, in year t-1, of the firms going private, PEPs were involved with the best performing firms. In three out of five of the post-going private years, PEPs had higher ROCE figures; however the differences were not statistically significant. A similar pattern is found with ROE, better performance in t-1 and worse, but statistically insignificant differences, post-going private. The EBITDA results also show a better t-1 figure but no differences post-deal.

Thus we find that deals involving PEPs had better performance before going private and, although relative to that year profitability fell, most years showed an insignificant difference in relation to the industry median. Therefore, although they may be driven by different reasons, neither produces better accounting performance. It may be that these broad types of performance measure do not identify specific improvements in companies' operations.

Insert Table 10

The pre-deal position was further analysed by examining the extent to which PEPs were involved with good, as opposed to poor, performers. The results are reported in Table 10. Splitting the sample into performance quartiles, we find that PEPs are more likely to be involved with firms going private that are in the top performance quartile and less likely to be involved with firms in the bottom quartile for performance relative to non-PEP deals.

The differences are all significant at the 1% level for ROCE and ROE for both the raw and industry adjusted figures. The figures for EBITDA are, however, not significant for the raw figures but are at the 1% level after industry adjustments are made.

#### Insert Table 11

Table 11 reports the extent to which PEP deals and non-PEP deals produce different debt and tax profiles. Comparing the total debt to assets ratio with that in t-1, PEP deals involve significant increases in debt for each year relative to debt in the year prior to going private. The average ratio for PEP deals was 20.99% in t-1 and peaked at 38.13% in t+4. In relation to the industry average, PEP deals have significantly higher debt in each of the post going private years, the only exception being t+5 .

In contrast, the table also shows that for non-PEP deals there is no change to the average debt position relative to the year before going private. Comparing t-1 with each of the post-deal years produces insignificant Z values for each year post-deal. In addition, there is also no significant difference in indebtedness relative to the industry average with all Z values being insignificant. Therefore firms going private in deals involving PEPs incur additional debt relative to the year prior and to the industry average. Non-PEP deals, however, experience no such increase. This is consistent with the hypothesis that PEPs are more likely to take on extra debt as an additional monitoring mechanism.

Comparing PEP and non-PEP deals, the table shows that PEPs have higher total debt to assets ratios in each of the post going private years but the difference is significant only in year t+4.



In relation to the structure of debt, both types of deal produce situations in which the proportion of short term debt is significantly above the industry average and, by implication, the proportion of long term debt is significantly lower. In each year after going private deals involving PEPs have significantly higher short term debt relative to total debt. This contrasts with the situation in the year before going private when there was no significant difference. PTPs therefore significantly affect the capital structure of firms with substantially more short term debt, both relative to the year before and the industry average, being taken onto the balance sheet.

Table 11 also gives the results for the relative proportions of short term debt. There is a different pattern to the debt structure with PEP deals sustaining the very high proportion of short term debt throughout the period rising from 40.84% in t-1 to 97.50% by t+1 and remain at 100% in the following years. Non-PEP deals also increase significantly from 31.25% in t-1 to 99.00% in t+2 but the ratio continues to fall subsequently, making up less than half the total debt by t+4.

PEP deals exhibit a significant increase in short term debt for each year relative to year t-1 as do non-PEP deals . There is also evidence that PEP deals had significantly increased indebtedness relative to non-PEP deals, but only in t+4 and t+5.

In relation to tax savings, Kaplan (1989) argues that high debt firms offer the potential for tax savings because the interest payments made on the increased debt can be offset against tax. Table 11 shows that PEP deals result in a significant reduction in each year relative to

the pre-deal situation. Non-PEP deals show a significant reduction relative to t-1 in three post-deal years, t+1 to t+3.

Table 11 also shows that deals involving PEPs had significantly higher tax to equity ratios, relative to the industry average in the year prior to going private. Consistent with the Kaplan (1989) hypothesis, we find that PEP involvement significantly reduces tax payments both relative to the year prior to going private and relative to the industry average for each year after the event. A similar result was found for non-PEP deals with all post-deal years showing lower tax liabilities relative to t-1.

There is evidence that PEP target deals that appear to offer greater potential tax savings. For example, in year t-1, firms involved in PEP deals had significantly higher tax liability but in t+1, t+4 and t+5 they had significantly lower tax outgoings than non-PEP deals indicating greater potential tax savings. However, as argued earlier, the lower tax may be more a reflection of poorer profitability than of tax benefits gained by increasing debt.

#### Insert Table 12

Table 12 evaluates the impacts of PEP and non-PEP deals on the three efficiency measures. First, it would be expected that closer monitoring by a PEP would result in significant reductions in expenses. The table shows that PEPs have been much more successful in reducing expenses than have non-PEP deals. Relative to t-1, PEP deals had lower expenses ratios in each post-deal year. In contrast, with the exception of t+1, the reduction was not significant for any of the years for the non-PTP deals

We also find that each year after going private expenses are significantly below that industry average for each of the post-deal years. In contrast, there is no evidence that non-PEP deals produce significant cost savings relative to the industry average with each year being statistically insignificant.

Comparing the two types of deal, in t-1 the difference in expenses was not statistically different but PEP deals had significantly lower expenses for each of the post-going private years. In contrast, non-PEP deals showed an initial reduction in t+1 but increases in subsequent years. None of the post-transactions figures were statistically significant. Overall, both types of deal lead to lower expenses but the reduction was greater for PEP deals with the figure going from 21.28% of total assets to 2.83% whereas the comparable fall for non-PEP deals was from 27.94% to 18.34%.

Second, it is shown that both PEP and non-PEP deals lead to an increase in profit per employee in the years after going private but the effect is stronger for PEP deals. Relative to the year before going private, PEP deals experience significant increases in profit per employee in years t+2 and t+5 but non-PEP deals do not with each year being insignificantly different from t-1. Relative to the industry average, PEP deals generate significantly higher profit per employee in each post-deal year. Non-PEP deals produce insignificant results except for year t+1 where there is weak evidence of improved performance.

Prior to going private, firms involved with PEPs had significantly better profit per employee than non-PEP firms in the year prior to the deal and there is evidence that this continues

post-deal with PEP deals having higher figures for each year, with the difference being statistically significant in t+3 and t+5.

Third, there are also contrasting outcomes for the sales-to-assets measure of efficiency. Comparing the pre and post situations, PEP deals see a significant fall in sales to assets for each of the post-deal years. Relative to the industry average, PEP deals show declining sales-to-assets ratios over time and significantly lower figures for years t+1, t+3, t+4 and t+5. The non-PEP deals saw a significantly lower figure in t+1 but no difference in all other years. The sales to assets figures show no short term difference between PEP and no-PEP deals but by t+4 and t+5, non-PEP transactions had significantly higher sales to assets figures than PEP transactions. Thus the results indicate significant efficiency changes in relation to cost control but not in terms of asset utilisation.

#### Insert Table 13

Table 13 sheds light on the debate concerning the employment effects of deals involving PEPs. There is evidence that going private transactions involving PEPs do lead to significant falls in employment relative to the industry average, particularly in year t+1. However, in the other years, the changes in employment are not significantly different to those firms remaining public.

Significant changes appear to be confined to one specific year rather than spread over a period of time. Non-PEP deals also experience significant job losses in t+1 as well as in t+2. These results suggest that employment restructuring is not confined to deals involving PEPs but rather that it is a feature of all going private transactions. In addition, the patterns of employment change are not significantly different from what is happening at the industry

level. This is consistent with recent work for buy-outs in general by Amess and Wright (2007b).

In terms of changes in employment, Table 13 shows that, with the exception of t+5, there is no difference between PEP deals and non-PEP deals. By t+5, non-PEP deals are creating employment whereas PEP-backed deals are still shedding jobs.

Taking the analysis further, the table also shows the median levels of employment for each year. We find that employment creation is more likely to be found in non-PEP deals. For PEP deals, the median falls each year and by t+5 the median employment figure is 9, down from 27 in t+1. This could be influenced by significant levels of divestment. For non-PEP deals, the figure falls to 191 in t+1 and rises to 430 in t+5. For deals involving private equity providers, relative to the year t+1, the year in which significant job reductions occurred, the percentage of firms that increase employment is 20.5%, 24.7%, 20.5% and 12.3% for years t+2, t+3, t+4 and t+5, respectively. The figures are higher for non-PEP deals with the increases being 26.5%, 32.7%, 32.7% and 24.5% relative to the employment figure in t+1. As the table also shows, the median employment figure of PEP backed deals fall each year but increases for non-PEP deals after t+1 and is higher in t+5 than in t-1. This suggests that both types of deal result in an initial rationalisation of employment but that PEP backed deals offer fewer opportunities for subsequent job creation.

Table 13 also shows the impact on the change in fixed assets. The figures show that PEP deals have lower figures than the industry average in t+2, t+3, and t+5. The negative medians for t0, t+1 and t+2 indicate that the value of fixed assets declines in the short run

after going private. The reduction in fixed assets may be a reflection of post-deal divestment activity given that divestments occurred in 45.2% of deals involving PEPs but in only 4.1% of non-PEP deals.

There is a significant fall in fixed assets for non-PEP deals in t+1 but slight increases in later years. However, non-PEP deals did not increase their fixed assets as quickly as firms remaining public, t+3. Given that non-PEP deals rarely result in divestment, the reduction in fixed assets may be explained by the shutting down of facilities.

#### **(ii). Development of the Industry adjusted analysis**

The analysis is developed by examining how the industry adjusted relationships for PEP and non-PEP deals change during the post-PTP period. The results compare the industry adjusted situation of firms in the year prior to going private with each of the post transaction years. Figures for the year of the transaction are included for completeness but caution should be exercised in drawing firm conclusions from them because of potential accounting adjustments encountered around the time of the transaction. The tables allow us to determine how things have changed, either improved or deteriorated, after going private and will offer additional insights into the success of the change in organisational form.

Insert Table 14

Table 14 shows the percentage of firms that reported higher industry adjusted ROCE, ROE and EBITDA figures relative to the situation in the year prior to going private. In terms of ROCE, PEP firms experience a short term improvement in performance with the figure peaking in year t+2 at 47.9%. In later years, this falls and by t+5 it is back to the level at the time of the deal. In no year does the figure reach 50% with three of the other years being

below 40%. These results suggest short term improvements, with the situation being less clear-cut in later years. ROE also peaks in t+2 but by t+4, the percentage having higher returns than in t-1 has started to rise. The EBITDA figures show less movement and the figures for t+1 and t+5 are similar.

In contrast, the evidence suggests that non-PEP deals produce better industry relative profitability figures. In each of the post-deal years they have a higher percentage greater than the year before going private. For years t+1 onwards, they have at least 50% of firms showing better performance with the best year being t+2 with 59.6% of firms reporting higher ROCE figures. Similar results are found for ROE and EBITDA with non-PEP transactions leading to much better relative performance than PEP deals.

#### Insert Table 15

Table 15 shows how the industry-adjusted debt figures change relative to year t-1. In terms of debt to total assets, on average, over 50% of PEP deals had more debt relative to the industry average than prior to going private. This is consistent with debt being an important element of PTPs. Although the figure was slightly lower, non-PEP transactions also resulted in around half of the deals increasing indebtedness but their debt levels remained consistently lower than those of PEP deals.

There are differences in the term structure of debt. PEP deals consistently have higher short term to total debt ratios with almost all debt being short term by year t+5. This confirms that PEPs are more likely to increase the pressure on management to meet higher interest payments as well as paying off the debt itself. Non-PEP deals experience a slight fall in the proportion of short term debt, and hence an increase in the proportion of longer term debt.

These results suggest that the management of PEP-backed deals are under greater short term pressures than those in non-PEP deals.

Table 15 also shows how industry adjusted taxation relative to equity fell relative to the year before going private. In terms of tax paid, there is evidence that both types of deal result in lower tax payments with PEP deals being more successful in reducing their tax liability. In 4 out of 5 post-deal years, at least 70% of firms paid less than before going private when a PEP was involved. However, as discussed above, this may be mainly driven by lower profitability. The figure was higher than that for non-PEP transactions which averaged 55.7% and with a range between 48.1% and 65.9%.

Insert Table 16

Table 16 reports how industry adjusted efficiency changes in the post PTP period. The results show that PEP deals were more successful in reducing expenses in each post-deal year, particularly in years t+2 to t+4 where the figure exceeded 80% each year. Non-PEP deals were also successful but apart from t+5, the figures are all lower. These results indicate that PEPs are more successful in driving down costs possibly as a result of increased monitoring.

Both types of deal lead to more firms achieving increased profit per employee. However, it is not clear which type of deal is better with PEP deals producing higher figures in years t0, t+2 and t+3 but lower figures for the other years. In contrast, asset utilisation is much more efficient for non-PEP deals with each year from t+1 to t+5 being higher than those for PEP deals.

Insert Table 17



Table 17 reports the industry adjusted changes in employment and changes in fixed assets for PEP and non-PEP transactions. The employment figures show that employment changes are likely to be higher for non-PEP transactions. Relative to the change in the year prior to going private, by year t+2, firms involved in non-PEP deals have a far higher percentage with higher employment changes. The picture for changes in fixed assets is less clear cut with both types of deal generally showing a minority of firms increasing their fixed assets faster than in the year prior.

**(iii). Asset stripping?**

One area of controversy surrounding the involvement of PEPs is that they aim to asset strip the business and hence reduce employment, (ITUC, 2007). The figures reported in Tables 13 and 17 offer some support for this view but do not directly measure asset disposals. A number of US studies have shown that LBOs are involved in significant divestment, for example, Bhagat, Shleifer and Vishny (1990), Kaplan (1991) who reported the sale of 43% and 34% of assets, respectively, and Seth and Easterwood (1993) who found that 43% of firms divested diversified parts of the business. We investigate the issue of divestment further by examining its relative incidence and linking it to the size of the PTP deal. The results are reported in Table 18, Panels A and B.

**Insert Table 18**

Divestment data are constructed from press reports and company accounts. The data are often partial in that a report merely states that divestment had occurred and details of the value of the assets involved are often missing. Most of the divestment recorded took place within three years post-PTP but the data cover all five years post going private. We therefore

use a dummy variable which has the value 1 if divestment took place and 0 if not. Across the whole sample, 28.7% of PTPs involved subsequent divestment.

As Panel A shows, post-PTP divestment is more likely to occur when PEPs are involved with the difference being significant at 1%. 45.2% of PEP deals and 4.1% of non-PEP deals resulting in assets being sold. However, a majority of PEP deals, 54.8%, did not result in the sale of part of the business.

Panel B shows that divestment was more likely to occur in the highest value public to private transactions, which tend to be PEP backed. The median bid value which resulted in subsequent divestment within five years is £135m and the median in which no divestment occurred is £38.95m. The difference is significant at 1%.

These larger deals offer the greatest potential opportunities for divestment because it will be easier to identify elements that are non-core, Seth and Easterwood (1993). Larger deals therefore allow the new management to evaluate the current operations and assess how far they have strayed from the key objectives of the company. It will be easier to find potential buyers for assets that do not have too small a value.

If assets are divested, this is consistent with the valuation discrepancy theory. The buyer places a higher value on the assets than the existing owner and it is rational to sell the assets. Even if the new owners closed down operating assets, as opposed to selling them, this is also consistent with the reduction of agency costs as the new organisational structure pursues shareholder interests. In this case, keeping an asset operating will incur greater costs than

closing it. Therefore, it is not surprising that bringing in PEPs, with their expertise in running businesses, is more likely to result in asset sales.

## **6. Further analysis of determinants of performance**

The unexpected negative impact that PEP involvement had on post-deal performance reported in Table 5 was further analysed by evaluating factors that could explain the result. Cotter and Peck (2001) argue that because of their greater access to finance, PEPs are more likely to be involved with larger deals. As Nikoskelainen and Wright (2007) argue, PEPs are likely to invest in larger buyouts because the expected returns will significantly contribute to the fund's returns. In addition, it may be more effective to manage a small number of large firms rather than a large number of small firms. Lastly, depending on the conditions of the deal, it may be easier to exit from larger firms because they are more likely to attract interest from potential buyers.

PEPs are more likely to be involved in the highest value deals. The median bid value for PEP deals is £92.20m and for non-PEPs deals it is £29.00m. The difference is significant at 1%. The size difference is further illustrated by considering the largest deals in greater detail.

If the sample is split by size quartile, PEPs are more likely to be involved with the largest deals than with the smallest ones. PEPs were involved in only 35.7% of the smallest quartile deals but 82.1% of the largest. Non-PEP deals were more likely to involve lower bids, 64.3% and only 17.9% of the largest bids. The difference is significant at 1%. In addition, if the sample is split at bid values of £100m, 45.6% of PEPs are above this value and only 16.3% of non-PEPs.

The impact of bid value was further investigated by including it in the regressions reported in Table 5. It had the effect of making the PEP variable insignificant in year t+1 and it remained insignificant in the other equations. If entered instead of the PEP variable, bid size became negative and significant in year t+1 but insignificant in other years. This indicates that deal size rather than PEP involvement drives the result. This finding is contrary to Nikoskelainen and Wright (2007) who find that the returns for exited UK buyouts are dependent on size, measured by bid value, with the highest returns being earned by firms in the largest initial transaction value group. This may be because they considered buyouts in general whereas our sample includes only PTPs. Our sample also consisted of larger firms, with a mean bid value of £144m and a median £56m compared to their mean bid value of £55m and a median of £14m, and so reflects greater potential complexity costs.

To further investigate the impact of size, the sample was split into two using the median bid value. When the regressions reported in Table 5 were run on the smaller valued bids, PEP became insignificant showing that their involvement did not affect post-deal performance. The regressions for the large bid values were similar to those in Table 5 with PEP being negative and significant in year t+1. These results held for both ROCE and ROE.

One interpretation of these results is that the negative PEP outcomes are driven by size factors rather than simply by the involvement of a private equity provider. The size of a deal determines whether or not a private equity provider is involved and thus the causality runs from size to PEP and not the other way round. The negative short run relationship between

PEP and post-deal performance reported in Table 5 may therefore simply reflect the greater complexity involved in dealing with larger firms.

## **7. Financial health**

In this section we further investigate the results reported in Tables 3 and 9 in which it was shown that accounting measures of performance tended to fall post-PTP both for the sample as a whole and for PEPs. It has been argued earlier in the paper that traditional accounting measures may not accurately reflect particular performance indicators that are important in a public to private transaction. This is analysed by means of the Taffler Z-score model which measures the financial health of a firm (Agarwal and Taffler, 2007). The score is usually employed to model company failure but we use the Z-score to model the overall financial health of firms involved in PTPs. A Z-score was computed for each firm using the coefficients set out in Agarwal and Taffler (2007)

$$Z = 3.20 + 2.18X_1 + 2.50X_2 - 10.68X_3 + 0.0289X_4$$

Where

$X_1$  = profit before tax/current liabilities

$X_2$  = current assets/total liabilities

$X_3$  = current liabilities/total assets

$X_4$  = no credit interval

Where the no credit interval is the number of days a company can finance its operations even if it is not generating revenue.

A negative Z-score indicates financial distress and in our sample only 6 (or 5%) were classified as being financially distressed in the year before going private which suggests that firms going private are financially sound. The higher the Z-score, the greater the firm's financial health. Further, a rising Z-score will indicate an improvement in the firm's position. The results are reported in Table 19

Insert Table 19

The figures for all PTPs, show an increase in the Z-score from 2.19 in t-1 to 5.59 in t+5. The Z test shows that relative to the year before going private, the increase in the Z-score was significant for years t+3 and t+4. . The absence of any consistent evidence of significant improvements in either the traditional profit-based performance (ROCE and ROE) or liquidity ratios namely, the current and quick ratios (not reported here) as well as the increase in short-term indebtedness, implies that this improvement in financial health is being driven by improvements in the no-credit interval. Indeed, this would support the findings relating to the post-deal position in terms of more effective control of expenses. Given that we have shown decreasing profitability in the earlier results, the higher Z-score must be caused by other variables more than compensating. The current ratio is stable over the period so the key sources of improved financial health are the reduction in current liabilities and the increase in the no credit interval.

The table also shows the two performance indicators, profitability and the Z-score, changed in the post-deal years. Four figures are presented – the first for both moving up, the second where both move down, the third where the Z-score rises but profitability falls and finally, one where Z falls and profitability increases. The key figure is the one where Z rises and

profitability falls because this will indicate the extent to which we get differing interpretations of the companies' performance.

For the whole sample, Table 19 shows that over the period, the percentage for both indicators increasing ranges from 20.6% to 28.1% with the overall average being 26.1%. The figures for both falling range from 19.2% to 30.2%. The figures for a falling Z-score but improving profitability is lower, between 14.0% and 27.4%.

In terms of improving financial health and decreasing profitability, the figures range from 26.7% to 37.3% with the average being 31.8%. For years t+3 to t+5, the figure for falling profitability and increasing z scores was over one third in each year. This supports the argument that traditional accounting measures used in isolation may not in themselves effectively identify the specific financial dimensions that are important in a PTP transaction.

The results therefore indicate that the rising Z-score is being driven by lower expenses and a concomitant in liquidity. Liquid assets are essential for the repayment of short term debt as it matures and is also required for the payment of, for example, fees and dividends.

The second part of the table breaks the figures down by type of deal. We find that the average Z-scores of PEP deals increases sharply after the deal whereas the non-PEP deals exhibit a non linear relationship, initially increasing and then falling. PEP deals show significantly higher z scores in t+3 and t+4 relative to the year before going private. Non-PEP deals showed no significant change relative to t-1. In addition, comparing the Z-scores shows that there is no significant difference between PEP and non-PEP deals for any of the

years. Given the reduction in accounting performance reported in Table 9, these results also suggest that cash generation is more important to PEP-backed deals.

The third part of Table 19 shows the how the Z-scores and ROCE figures changed for PEP deals, relative to t-1. The table shows that an average of 20.6% of firms experience higher profitability and higher Z-scores. The figures ranged from 13.6% to 27.8%. It is also shown that relatively few firms had a lower Z-score and higher profitability, the figures ranging from 12.1% to 27.8%. The range of firms having lower Z-scores and lower profitability is 8.8% to 29.8%.

The highest figures again relate to the percentage of firms that have the Z-score rising and profitability falling relative to the pre-PTP year. The figures range from 27.8% to 50.0% with the average being 40.1%. This shows that for deals involving PEPs a significant percentage report poorer profitability but also improving financial health..

The non-PEP deals present a different picture. On average 32.4% of deals result in higher Z-scores and higher profitability, the PEP figure was 20.6%. In relation to increasing Z-scores and falling profitability, in contrast to the PEP figure of 40.1%, non-PEP deals average 24.6% of cases. This further indicates the importance of short term cash generation to PEP deals.

## **8. Conclusions**

Using a hand collected data set this paper presents the first analysis of the impact effects of public to private transactions in the UK. It deals with a period in which PTPs have become



more important in terms of the value of assets acquired and of the numbers of deals undertaken.

The US literature on LBOs, which is dominated by PTPS, tends to find improved post-deal performance, Kaplan (1989), Singh (1990) and Smart and Waldfogel (1994). However, these studies deal with the first phase of LBOs that occurred in the 1980s at a time when it may have been easier to find undervalued which suggests that post-buyout performance improvements may have been easier to generate. Partial support for this view comes from Guo, Hotchkiss and Song's (2007) study of the second LBO wave which finds no evidence of improved industry adjusted performance. However, they did find short term gains if a different matching process was followed.

Our results show that performance deteriorates relative to the pre-buyout situation but there is evidence that firms do not perform worse than firms that remain public and some evidence that performance improves. A similar outcome applies to deals backed by PEPs, however there is no evidence that non-PEPs perform better than the industry average. These results are consistent with the US evidence of Guo, Hotchkiss and Song (2007) and show that PTPs do add value.

We also find that contrary to expectations, PEP involvement appears to have a negative effect on the change in profitability relative to the situation prior to the deal. However, this was explained by the fact that PEPs were involved in the largest deals and these had the poorest performance. One explanation for this is that larger deals are more difficult to **restructure** and hence may take longer to generate better results. Although the performance

was lower relative to going private, there is evidence that PEPs performed better than the industry average and no worse than non-PEP deals.

It was also found that PTPs experienced job losses in the years immediately after going private; however, there was evidence that employment increased subsequently. The results show a difference in the employment outcomes of PEP and non-PEP deals with the former incurring job losses each year and the latter employment increases after the first year post-deal.

The analysis has also shown that public to private transactions differ from the industry average in terms of debt, and the structure of debt. We find that PTP tax liability falls but this is at least partly caused by the fall in profitability relative to the year before going private. Expenses were also found to be lower after going private and profit per employee higher. These measures indicate increased efficiency.

PEP deals experienced higher than industry average debt but non-PEP deals did not. Both types of deal paid lower taxes but only PEPs had lower expenses. PEPs also improved profit per employee whereas non-PEP deals did not.

The Z-score results also show a significant increase in the financial health of the firms post-deal. The improvements appear to be driven by an increase in the firms' liquidity. The increased liquidity is essential for repaying interest on the firms' higher debt. The analysis shows that it is this aspect of performance, rather than traditional accounting profitability measures, that provides insights into the post-deal performance.

The paper therefore finds significant differences between PTPs in general and PEP deals and non-PEP deals in particular in relation to a number of key characteristics. The overall impression is one in which PTPs create value by improvements in efficiency and divestment. The results are consistent with the more general MBO/MBI literature and offer general support for the Jensen (1986) argument that buyouts create an effective organisational structure based on improved monitoring and incentives.

The research raises a number of potential avenues for further research. The first concerns the impact of ownership on performance. It has been shown that the success of total MBO transactions is affected by managerial ownership (Nikoskelainen and Wright, 2007). The effect on PTPs may offer some additional insights. Second, splitting the sample of going private transactions by MBO and MBI may offer some additional insights into the consequences of going private. Third, the size of deal has been shown to be important so further analysis of its role could prove useful. Fourth, the relatively weak performance effects in terms of accounting profitability and the stronger effects on liquidity raise an important question concerning the returns generated to investors when deals are eventually exited. Significant value may be created for investors from increased liquidity even with weak improvement in accounting profitability. Further research is needed to examine the IRRs generated on exited deals and the extent to which these are determined by performance improvements or arbitrage in the form higher exit multiples. This analysis may need to wait until sufficient of the current cohort of PTPs have exited.

## Footnotes

1. A problem with using measures such as ROCE and EBITDA is that asset valuation may affect the outcome. We therefore include the return on equity as an alternative. We did not use the return on sales because a number of firms did not return sales figures in the post deal period and this would have resulted in a significant loss of observations.
2. Total administrative expenses are used because of the way the information is presented in the accounts. No consistent breakdown of the figure is given.
3. The figures reported are medians rather than arithmetic averages because the data are non-normally distributed. For example, ROCE in the year before going private ranged from -437.54% to 230.25% and in the year after going private from -862.8% to 773.34%. The kurtosis statistic for ROCE in t-1 was 26.36 and in t+1 it was 53.55 (a normal distribution would have the value 0). Removing the effects of outliers for profitability would have resulted in the loss of significant numbers of observations. It should also be noted that the performance outliers were not confined to the same firm in different years and this would therefore exacerbate the loss of observations. Other variables, for example, expenses, tax, profit per employee, change in employment, change in fixed assets, were also non-normally distributed.
4. This methodology was used by, for example, Kaplan (1989) and Holthausen and Larcker (1996). In addition, although not reported, the analysis for the whole sample was also carried out for ROCE and ROE using all firms in the industry, both public and private, as the benchmark. The results were similar.
5. A number of studies used the level and changes in the levels of variables in their analysis of post-deal performance, for example, Zahra (1995), Holthausen and Larcker (1996) and Desbrieres and Schatt (2002). However, as outlined above, both the levels and changes in

the levels of performance indicators exhibited significant numbers of outliers and hence would have resulted in the loss of many observations. It was therefore decided to measure performance as a binary variable, as defined, to maximise the number of observations included.

6. If resignations are broken down by type of director, chairman, CEO and finance director, no significant relationship is found.

7. Time dummies were used to ascertain the impact of time specific influences. All years were insignificant.

8. The logistic analysis was also developed to include PEP reputation (Wright, Weir and Burrows, 2007) and the number of participants in the equity syndicate (Nikoskelainen and Wright, 2007). Both variables were found to be insignificant.

9. One study, (Cressy, Munari and Malipiero, 2007) includes a PEP dummy as an explanatory variable of three year average post deal profitability along with other variables such as debt in the year of the deal and profitability in the year of the deal. However, it may be argued that PEP involvement is determined by the existing level of debt and current performance. The potential simultaneous nature of the relationship is therefore not addressed.

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**Table 1**

**Panel A Industrial distribution of the sample**

SIC(2003) Division	Description	Number	%
D	Manufacturing	36	29.5
E	Electricity, Gas and Water Supply	2	1.6
F	Construction	5	4.1
G	Wholesale and Retail Trade; Repair of Motor Vehicles, Motorcycles and Personal and Household Goods	25	20.5
H	Hotels and Restaurants	2	1.6
I	Transport, Storage and Communication	4	3.3
J	Financial Intermediation	5	4.1
K	Real Estate, Renting and Business Activities	38	31.1
N	Health and Social Work	3	2.5
O	Other Community, Social and Personal Service Activities	2	1.6

**Panel B Sample by year**

	1998	1999	2000	2001	2002	2003	2004
Number	16	32	29	22	15	7	1
%	13.1	26.2	23.8	18.0	12.3	5.7	0.8

Table 2

Variable definitions

Variable	Label	Formulation
Financial Variables:		
Return on Capital Employed	ROCE	(Profit Before Interest and Tax – Exceptional Items)/Capital Employed
Return on Equity	ROE	(Profit After Tax – Exceptional Items)/Shareholders' Equity
Earnings Before Interest, Tax, Depreciation and Amortization to Total Assets	EBITDATA	(Earnings Before Interest, Tax, Depreciation and Amortization – Exceptional Items)/Total Assets
Total Debt to Total Assets	TDTA	(Long-Term Loans + Short-Term Loans)/Total Assets
Short-Term Debt to Total Debt	STDTD	(Short-Term Loans)/(Long-Term Loans + Short-Term Loans)
Tax to Equity	TAXEQ	Taxation/Shareholders' Equity
Expenses to Total Assets	EXPTA	Administration Expenses/Total Assets
Profit Per Employee	PROFEMP	(Profit After Tax – Exceptional Items)/Number of Employees
Sales to Total Assets	SALESTA	Turnover/Total Assets
Change in Employment	CHEMPLOY	Year on year percentage change in the number of employees.
Change in Fixed Assets	CHFA	Year on year percentage change in the balance sheet value of fixed assets.
Non-Financial Variables:		
Percentage of Director Resignations	Resign	The percentage of director resignations in the six months prior to the deal and the six months after.
Premium	Premium	A dummy variable that has the value 1 if a premium was paid and 0 if not
Private Equity	PEP	A dummy variable that has the value 1 if a private equity provider was involved in the deal and 0 if not.
MBO	MBO	A dummy variable that has the value 1 if the PTP was an MBO and 0 if not

**Table 3**  
**Statistics for the whole sample of PTP transactions.**

ROCE is earnings before interest and tax less exceptional items deflated by capital employed. ROE is profit after tax less exceptional items deflated by shareholders' equity. EBITDA is (Earnings before Interest, Tax, Depreciation and Amortization – Exceptional Items) deflated by Total Assets. Median figures quoted. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used.

	t-1	t0	t+1	t+2	t+3	T+4	t+5
<b>(i) ROCE (%)</b>							
PTP median	12.28	8.10	7.35	10.71	5.79	6.73	6.53
Industry median	9.16	8.55	7.82	7.47	7.51	6.91	8.37
PTP v industry Z	4.18***	1.96**	1.75*	3.62***	0.61	1.36	0.41
PTP t-1 v t+n Z			2.63**	0.35	3.30***	2.38**	2.52**
n	122	122	122	118	113	99	78
<b>(ii) ROE (%)</b>							
PTP median	10.40	6.31	5.64	7.53	4.05	5.70	4.41
Industry median	9.32	9.38	8.79	8.75	8.43	9.02	9.88
PTP v industry Z	1.75*	1.03	0.32	2.07**	1.06	0.14	0.74
PTP t-1 v t+n Z			2.17**	0.59	3.03***	1.79*	1.86*
n	122	122	122	118	113	99	78
<b>(iii) EBITDA (%)</b>							
PTP median	11.53	7.98	5.82	8.48	5.58	6.01	5.24
Industry median	10.58	9.73	9.37	9.48	9.03	9.03	9.63
PTP v industry Z	1.95*	1.05	1.86*	0.50	2.09**	1.44	1.33
PTP t-1 v t+n Z			3.25***	1.77*	4.35***	3.01***	3.21***
n	122	122	122	118	113	99	78

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%

**Table 4**  
**Percentage of PTP with industry adjusted performance higher than in the year before going private for each year after the deal.**

ROCE is earnings before interest and tax less exceptional items deflated by capital employed. ROE is profit after tax less exceptional items deflated by shareholders' equity. EBITDA is (Earnings Before Interest, Tax, Depreciation and Amortisation – Exceptional Items) deflated by Total Assets. Industry adjusted figures, company median minus the industry median.

	t0	t+1	t+2	t+3	t+4	t+5
ROCE > t-1	40.2	44.3	52.5	40.9	46.5	42.3
ROE > t-1	38.5	45.9	52.5	41.6	44.4	43.6
EBITDA > t-1	36.9	33.3	39.5	28.3	32.0	30.6

**Table 5**  
**Logistic regression of PTP success.**

Dependent variables are measures of PTP success. Success is defined as having higher industry adjusted profitability post going private. Each dependent variable has a value of 1 if the industry adjusted figure in year t+n is greater than in the year before going private and 0 if less. ROCE1 is earnings before interest and tax less exceptional items deflated by capital employed for year t+1 relative to ROCE in t-1. ROCE2, ROCE3, ROCE4 and ROCE5 are similarly defined. ROE1 is profit after tax less exceptional items deflated by shareholders' equity for year t+1 relative to ROE in t-1. ROE2, ROE3, ROE4 and ROE5 are similarly defined. PEP is a dummy variable which has a value of 1 if a private equity provider was involved in the deal and 0 if not. Percent is the percentage of directors resigning within the period six months before and six months after the firm going private. MBO is a dummy variable which takes the value 1 if the deal was a management buy-out and 0 if it was not. Premium is a dummy variable that has the value 1 if a premium was paid for the firm's shares and 0 if it was a discount. Wald statistics in parentheses

<b>ROCE</b>	ROCE1	ROCE2	ROCE3	ROCE4	ROCE5
PEP	-0.8162 (4.36)**	-0.5177 (1.73)	-0.6606 (2.64)	-0.4992 (1.36)	-0.5583 (1.25)
Resign	-0.0127 (2.96)*	-0.0032 (0.19)	-0.0090 (1.35)	-0.0106 (1.58)	-0.0087 (0.73)
MBO	-0.2883 (0.43)	0.2993 (0.49)	-0.1304 (0.08)	0.0714 (0.02)	0.4366 (0.52)
Premium	0.0768 (0.03)	0.4919 (1.17)	0.5366 (1.28)	0.0876 (0.03)	-0.2553 (0.21)
Constant	1.1055 (2.60)	-0.0046 (0.01)	0.1319 (0.04)	0.5273 (0.61)	0.2685 (0.11)
$\chi^2$	8.62*	3.54	4.82	3.72	4.35
Nagelkerke R <sup>2</sup>	0.09	0.04	0.05	0.04	0.07
<b>ROE</b>	ROE1	ROE2	ROE3	ROE4	ROE5
PEP	-0.7989 (4.23)**	0.5025 (1.62)	-0.4493 (1.17)	-0.4322 (1.02)	-0.2418 (0.23)
Resign	-0.0019 (0.06)	-0.0008 (0.01)	-0.0176 (4.69)**	-0.0090 (1.14)	0.0165 (2.59)
MBO	0.0154 (0.01)	0.1744 (0.16)	0.0175 (0.01)	0.2355 (0.23)	-0.2288 (0.15)
Premium	-0.6662 (2.34)	0.2661 (0.34)	-0.2393 (0.26)	-0.2863 (0.35)	-0.0726 (0.02)
Constant	0.8754 (1.98)	0.1260 (0.04)	0.9062 (1.83)	0.4859 (0.51)	0.8417 (1.09)
$\chi^2$	8.52*	2.13	9.06*	3.91	3.72
Nagelkerke R <sup>2</sup>	0.09	0.02	10.4	0.05	0.06

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 6**  
**Statistics for the whole sample of PTP transactions.**

Debt structure of firms going private and industry averages. TDTA is (Long-Term Loans + Short-Term Loans)/Total Assets. STDTD is (Short-Term Loans)/(Long-Term Loans + Short-Term Loans). Tax is taxation/shareholders' equity. Median figures quoted. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used.

	t-1	t0	t+1	t+2	t=3	t+4	t=5
<b>(i) TDTA (%)</b>							
PTP median	21.30	25.23	31.84	32.71	33.74	35.91	33.87
Industry median	20.17	21.31	22.93	22.91	23.97	24.45	23.26
PTP v industry Z	1.22	2.86***	2.94***	3.00***	2.75***	3.03***	1.90*
PTP t-1 v t+n Z			2.91***	2.74***	2.89***	2.77***	1.97**
n	113	111	109	108	108	85	69
<b>(ii) STDTD (%)</b>							
PTP median	30.95	56.31	97.50	100.00	99.50	100.00	100.00
Industry median	40.00	40.00	35.50	36.00	33.00	29.00	32.00
PTP v industry Z	1.58	4.45***	6.37***	6.31***	6.14***	5.80***	6.03***
PTP t-1 v t+1 Z			4.81***	4.31***	4.06***	3.17***	3.75***
<b>(iii) Tax (%)</b>							
PTP median	4.06	2.09	0.21	0.18	0.00	0.31	0.33
Industry median	4.39	4.06	3.73	3.36	3.34	3.60	3.75
PTP v industry Z	1.27	1.23	4.99***	4.12***	5.28***	4.28***	4.53***
PTP t-1 v t+n Z			5.62***	4.85***	5.50***	4.60***	4.41***
	(n=119)	(n=119)	(n=119)	(n=115)	(n=111)	(n=95)	(n=75)

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 7**  
**Statistics for the whole sample of PTP transactions.**

Expenses are defined as administration expenses to total assets. Profit per employee is (Profit After Tax – Exceptional Items)/Number of Employees. Sales/total assets is turnover/total assets. Median figures quoted. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used.

	t-1	t0	t+1	t+2	t=3	t+4	t=5
<b>(i) Expenses (%)</b>							
PTP median	22.12	19.82	4.93	5.36	6.67	9.23	5.57
Industry median	32.44	31.35	30.75	30.17	32.87	32.97	33.79
PTP v industry Z	0.54	0.26	3.59***	3.78***	3.31***	3.32***	2.85***
PTP t-1 v t+n Z			4.88***	5.32***	4.18***	4.00***	3.92***
	(n=115)	(n=115)	(n=115)	(n=105)	(n=97)	(n=85)	(n=63)
<b>(ii) Profit per employee</b>							
PTP median	3.38	3.30	5.78	7.82	5.51	6.86	9.06
Industry median	3.03	2.98	3.19	2.82	2.66	2.94	3.18
PTP v industry Z	1.55	0.18	2.59***	3.37***	0.16	0.28	3.49***
PTP t-1 v t+n Z			1.52	2.15**	1.20	2.05**	2.88***
n	96	96	96	80	73	65	50
<b>(iii) Sales Total assets (%)</b>							
PTP median	1.12	1.05	0.44	0.78	0.82	0.49	0.57
Industry median	1.24	1.21	1.09	1.18	1.16	1.19	1.11
PTP v industry Z	0.91	1.10	2.65***	1.78*	2.09**	2.57**	1.86*
PTP t-1 v t+1 Z			2.80***	2.92***	2.54**	2.93***	2.66***
	(n=83)	(n=83)	(n=83)	(n=67)	(n=64)	(n=63)	(n=42)

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.



**Table 8**  
**Statistics for the whole sample of PTP transactions.**

Change in employment is the year on year percentage change in the number of employees. Change in fixed assets is the percentage change in fixed assets relative to the previous year. Median figures quoted. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used.

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b><i>(i) Change in employment (%)</i></b>							
PTP median	2.44	1.77	-8.58	-0.23	0.00	0.00	0.00
Industry median	2.56	-0.18	0.20	-0.36	0.63	-0.16	-1.18
PTP v industry Z	0.57	2.54**	4.03***	1.90*	1.20	0.39	0.35
	(n=96)	(n=96)	(n=96)	(n=81)	(n=73)	(n=63)	(n=51)
Median (numbers)	589	396	67	48	59	49	70
<b><i>(ii) Change in fixed assets (%)</i></b>							
PTP median	4.64	-1.85	-3.65	-0.76	0.00	0.00	0.00
Industry median	9.12	9.64	5.55	4.77	3.86	3.86	6.95
PTP v industry Z	1.86*	3.42***	2.96***	4.06***	2.66***	1.60	3.05***
	(n=107)	(n=107)	(n=107)	(n=101)	(n=97)	(n=83)	(n=63)

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 9**

**A comparison of the profitability characteristics of PEP transactions with the industry average and with non-PEP transactions with the industry average.**

ROCE is earnings before interest and tax less exceptional items deflated by capital employed. ROE is profit after tax less exceptional items deflated by shareholders' equity. EBITDA is (Earnings Before Interest, Tax, Depreciation and Amortisation – Exceptional Items) deflated by Total Assets. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b>(i) ROCE (%)</b>							
PEP median	17.80	11.32	7.18	11.41	5.80	6.79	5.46
Industry median	9.16	8.55	7.66	6.57	7.19	6.88	8.42
PEP v industry Z	4.90***	2.98***	1.54	3.17***	0.92	1.10	0.71
PEP t-1 v t+n Z			2.96***	0.87	3.30***	2.71***	1.95*
Non-PEP median	10.33	6.39	7.74	10.17	5.61	6.66	7.85
Industry median	9.16	8.55	8.35	8.99	8.45	7.23	8.32
non-PEP v industry Z	0.14	0.64	0.94	1.77*	0.17	0.99	0.45
Non-PEP t-1 v t+n Z			0.20	1.16	0.98	0.48	1.68*
PEP v non-PEP Z	3.47***	2.39**	0.37	0.08	0.47	.017	0.19
<b>(ii) ROE (%)</b>							
PEP median	13.93	7.77	6.02	8.71	3.88	5.72	4.37
Industry median	9.90	9.69	8.64	8.43	8.21	9.37	10.19
PEP v industry Z	3.06***	0.02	0.15	1.96**	0.02	0.29	0.18
PEP t-1 v t+n Z			2.63***	1.31	2.71***	2.00**	1.23
Non-PEP median	7.01	5.97	5.29	6.54	4.23	5.68	4.79

Industry median	9.28	8.95	9.32	9.37	8.43	7.83	9.00
non-PEP v industry Z	1.19	1.65*	0.64	0.68	1.80*	0.32	1.18
Non-PEP t-1 v t+n Z			0.08	0.78	1.31	0.37	1.52
PEP v non-PEP Z	2.99***	1.35	0.03	0.05	0.55	0.14	0.44
<b>(iii)</b> <b>EBITDA</b> (%)							
PEP median	13.67	8.91	4.01	6.87	4.59	5.50	4.26
Industry median	10.45	9.64	9.29	8.90	8.99	8.80	9.55
PEP v industry Z	2.65***	0.40	0.90	0.15	1.34	1.91*	1.59
PEP t-1 v t+n Z			2.93***	2.69***	4.08***	4.00***	2.56***
Non-PEP median	10.77	6.10	6.35	9.31	6.48	6.57	8.66
Industry median	10.70	9.83	10.46	10.15	9.58	9.11	9.74
non-PEP v industry Z	0.10	2.15**	1.68*	0.57	1.63	0.05	0.01
Non-PEP t-1 v t+n Z			1.32	0.34	1.84*	0.84	1.86*
PEP v non-PEP Z	2.11**	1.85*	0.29	1.34	0.78	1.22	1.44

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 10**  
**A comparison of PEP and non-PEP buyouts by performance quartile in the year before going private.**

ROCE is earnings before interest and tax less exceptional items deflated by capital employed. ROE is profit after tax less exceptional items deflated by shareholders' equity. EBITDA is (Earnings Before Interest, Tax, Depreciation and Amortisation – Exceptional Items) deflated by Total Assets Industry adjusted figures subtract the industry median from the individual firm's figure.

	PEP involved in buyout (%)	No PEP involved (%)
Raw figures		
ROCE (lowest quartile)	43.3	56.7
ROCE (highest quartile)	83.3	16.7
$\chi^2$	10.33***	
Industry adjusted figures		
ROCE (lowest quartile)	33.3	66.7
ROCE (highest quartile)	80.0	20.0
$\chi^2$	13.30***	
Raw figures		
ROE (lowest quartile)	46.7	53.3
ROE (highest quartile)	77.4	22.6
$\chi^2$	6.13***	
Industry adjusted figures		
ROE (lowest quartile)	40.0	60.0
ROE (highest quartile)	70.5	29.5
$\chi^2$	7.80***	
Raw figures		
EBITDA (lowest quartile)	53.3	46.7
EBITDA (highest quartile)	60.7	39.3
$\chi^2$	1.32	
Industry adjusted figures		
EBITDA (lowest quartile)	41.4	58.6
EBITDA (highest quartile)	73.3	26.7
$\chi^2$	6.16***	

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 11**  
**A comparison of the debt characteristics of PEP transactions with the industry average and with non-PEP transactions with the industry average.**

TDTA is (Long-Term Loans + Short-Term Loans)/Total Assets. STDTD is (Short-Term Loans)/(Long-Term Loans + Short-Term Loans). Tax is taxation/shareholders' equity. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used,

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b>(i) TDTA (%)</b>							
PEP median	20.99	27.75	33.78	33.03	34.84	38.13	31.10
Industry median	19.47	20.69	22.82	22.93	24.45	23.49	21.84
PEP v industry Z	1.28	2.45**	2.70***	2.83***	2.80***	3.34***	1.48
PEP t-1 v t+n Z			2.57***	2.73***	2.66***	3.40***	2.04**
Non-PEP median	23.57	21.59	25.75	22.18	26.54	28.96	37.64
Industry median	22.46	22.10	23.16	22.50	21.77	22.74	22.68
Non-PEP v industry Z	0.39	1.31	1.11	0.26	0.35	0.38	1.23
Non-PEP t-1 v t+n Z			1.31	0.39	0.67	0.01	0.39
PEP v non-PEP Z	0.36	0.59	0.98	1.32	1.41	1.95*	0.11
<b>(ii) STDTD</b>							
PEP median	40.84	56.63	97.50	100.00	100.00	100.00	100.00
Industry 2 median	40.00	39.50	35.50	36.00	33.00	28.00	32.50
PEP v industry Z	1.16	3.61***	5.30***	5.91***	5.43***	5.40***	5.27***
PEP t-1 v t+n Z			3.78***	4.34***	4.12***	3.64***	3.98***

Non-PEP median	31.25	54.11	99.00	93.50	64.50	49.50	49.50
Industry Z median	42.00	40.50	34.00	33.50	32.50	30.00	29.00
Non-PEP v industry Z	1.06	2.72***	3.86***	2.98***	3.10***	2.71***	2.31**
Non-PEP t-1 v t+n Z			2.95***	1.40	1.06	0.03	0.12
PEP v non-PEP Z	0.44	0.46	0.04	0.75	1.35	2.10**	3.65***
<b>(iii) Tax (%)</b>							
PEP median	7.17	2.60	0.00	0.17	0.00	0.02	0.06
Industry median	4.70	4.06	3.73	3.25	3.28	3.65	3.99
PEP v industry Z	3.09***	0.41	3.38***	2.76***	3.86***	3.74***	4.20***
PEP t-1 v t+n Z			4.81***	3.89***	4.84***	4.37***	3.92***
Non-PEP median	2.26	1.52	0.77	0.31	0.00	0.97	1.00
Industry median	4.33	4.06	3.98	3.85	3.85	3.48	3.44
Non-PEP v industry Z	2.19**	2.61***	3.49***	3.34***	3.58***	2.06***	1.85*
Non-PEP t-1 v t+n Z			2.34**	2.65***	3.00***	1.52	1.56
PEP v non-PEP Z	3.77***	1.71*	1.88*	0.12	0.98	1.93*	2.44**

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 12**

**A comparison of the expenses, profit per employee and sales to assets characteristics of PEP transactions with the industry average and with non-PEP transactions with the industry average.**

Expenses are defined as administration expenses to total assets. Profit per employee is (Profit After Tax – Exceptional Items)/Number of Employees. Sales/total assets is turnover/total assets. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used,

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b><i>Expenses (%)</i></b>							
PEP median	21.28	17.81	3.10	2.63	3.81	5.03	2.83
Industry median	32.52	31.28	30.91	29.61	32.66	30.97	33.08
PEP v industry Z	0.32	0.15	3.84***	4.34***	3.67***	3.67***	3.34***
PEP t-1 v t+n Z			4.35***	5.59***	4.03***	4.05***	3.83***
Non-PEP median	27.94	21.86	11.29	14.32	13.98	20.78	18.34
Industry Median	32.44	31.41	30.75	32.44	32.76	34.09	32.09
Non-PEP v industry Z	0.48	0.41	0.52	0.47	0.93	0.69	0.45
Non-PEP t-1 v t+n Z			2.21**	1.36	1.49	1.38	1.49
PEP v non-PEP Z	0.27	0.14	2.13**	2.89***	1.91*	1.91*	1.91*
<b><i>Profit per employee</i></b>							
PEP median	4.16	3.67	7.07	29.45	6.81	10.43	82.29
Industry median	3.03	2.62	2.60	2.83	2.87	2.94	3.50
PEP v industry Z	2.09**	1.06	1.99**	2.86***	2.69***	2.20**	3.04***
PEP t-1 v t_n Z			2.13***	2.89***	1.91*	1.91*	1.91*
Non-PEP	2.03	1.99	4.67	2.94	2.84	3.58	3.57

median							
Industry median	2.94	3.30	3.31	2.82	2.49	2.83	2.82
Non-PEP v industry Z	0.15	1.03	1.65*	1.58	0.52	1.30	0.99
Non-PEP t-1 v t+n Z			1.21	0.31	0.03	1.51	0.33
PEP v non-PEP Z	1.68*	1.27	0.49	1.51	1.75*	1.44	2.25**
<b><i>Sales/Total assets (%)</i></b>							
PEP median	1.32	1.21	0.32	0.36	0.45	0.14	0.15
Industry median	1.24	1.20	1.08	1.09	1.20	1.14	1.10
PEP v industry Z	0.22	0.08	2.06**	1.36	1.70*	3.14***	1.96**
PEP t-1 v t+n Z			2.19**	2.88***	2.59***	3.25***	2.72***
Non-PEP median	1.16	1.11	0.99	0.98	0.90	0.98	1.30
Industry median	1.24	1.21	1.10	1.19	1.20	1.19	1.22
Non-PEP v industry Z	1.54	1.25	1.71*	1.21	1.08	0.17	0.33
Non-PEP t-1 v t+n Z			1.86*	1.33	0.95	0.77	0.89
PEP v non-PEP Z	0.71	0.63	1.46	1.05	1.01	2.37**	2.12**

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.



**Table 13**  
**A comparison of the change in employment and change in fixed assets characteristics of PEP transactions with the industry average and with non-PEP transactions with the industry average.**

Change in employment is the year on year percentage change in the number of employees. Change in fixed assets is the year on year percentage change in the balance sheet value of fixed assets. Industry median is the median value of publicly quoted firms in the sector. Wilcoxon signed rank test used,

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b><i>Change in employment (%)</i></b>							
PEP median	7.97	-2.73	-20.50	0.00	0.00	0.00	-2.94
Industry median	0.00	-1.47	0.41	-0.65	1.58	-2.19	0.61
PEP v industry Z	1.14	1.80*	3.52***	0.79	1.03	0.20	1.41
Non-PEP median	0.00	-1.80	-7.69	-2.42	0.00	0.54	1.81
Industry median	3.45	0.48	-0.36	1.67	1.58	7.55	-0.96
Non-PEP v industry Z	2.03**	1.08	2.19**	1.93*	0.56	0.39	1.79*
PEP v non-PEP Z	1.40	0.39	0.73	0.74	0.58	1.14	1.80*
PEP median (number)	751	491	27	23	16	12	9
Non-PEP median (number)	343	337	191	209	213	307	430
<b><i>Change in fixed assets (%)</i></b>							
PEP median	4.55	-0.29	-0.28	-0.56	0.00	0.00	0.00
Industry median	9.42	9.64	7.85	4.17	2.87	1.37	7.39
PEP v industry Z	1.27	2.26**	1.06	3.72***	1.74*	0.97	2.67***
Non-PEP median	3.69	-4.47	-6.00	0.62	0.14	0.08	0.50

Industry median	4.77	12.148	4.74	5.55	5.77	6.40	5.55
Non-PEP v industry Z	1.32	2.54**	3.55***	2.05	1.89*	1.20	1.48
PEP v non-PEP Z	0.05	0.28	1.57	0.39	1.50	1.19	1.26

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 14**  
**Industry adjusted performance comparisons of PEP and non-PEP deals.**

ROCE is earnings before interest and tax less exceptional items deflated by capital employed. ROE is profit after tax less exceptional items deflated by shareholders' equity. EBITDA is (Earnings Before Interest, Tax, Depreciation and Amortisation – Exceptional Items) deflated by Total Assets. The figures show the percentage of PEP and non-PEP deals that had better performance in each of the post going private years relative to the year before going private (higher profitability in year t+n relative to t-1).

	t0	t+1	t=2	t+3	t+4	t+5
<b><i>(i) ROCE</i></b>						
PEP (%)	35.6	35.6	47.9	34.8	41.0	36.0
Non-PEP (%)	46.9	57.1	59.6	50.0	55.3	53.6
<b><i>(ii) ROE</i></b>						
PEP (%)	30.1	37.0	47.9	35.3	39.3	40.0
Non-PEP (%)	51.0	59.2	59.6	51.1	52.6	50.0
<b><i>(iii) EBITDA</i></b>						
PEP (%)	39.7	33.8	35.3	35.9	32.8	34.8
Non-PEP (%)	42.9	49.0	50.0	41.5	50.0	46.2

**Table 15**  
**Industry adjusted debt comparisons of PEP and non-PEP deals.**

TDTA is defined as (Long-Term Loans + Short-Term Loans)/Total Assets. STDTD is (Short-Term Loans)/(Long-Term Loans + Short-Term Loans). The figures show the percentage of PEP and non-PEP deals that had higher TDTA and higher STDTD in each of the post going private years relative to the year before going private (higher debt in year t+n relative to t-1).

	t0	t+1	t=2	t+3	t+4	t+5
<b><i>TDTA</i></b>						
PEP (%)	55.6	57.7	53.2	58.3	67.3	55.8
Non-PEP (%)	50.0	55.0	50.0	50.0	48.5	57.7
<b><i>STDTD</i></b>						
PEP(%)	67.2	79.4	71.7	80.4	85.4	90.0
Non-PEP (%)	69.2	69.4	61.8	61.8	58.6	58.3
<b><i>Tax</i></b>						
PEP %	61.1	77.5	69.6	76.9	77.6	78.7
Non-PEP %	38.3	51.1	59.1	65.9	54.3	48.1

**Table 16**

**Industry adjusted profit per employee and sales to assets comparisons of PEP and non-PEP deals.**

Expenses is defined as administration expenses to total assets. Profit per employee is turnover/total assets. Sales/total assets is defined as turnover/total assets. The figures show the percentage of PEP and non-PEP deals that had higher profit per employee and higher Sales/total assets in each of the post going private years relative to the year before going private (higher profit and higher sales to assets in year t+n relative to t-1).

	t0	t+1	t=2	t+3	t+4	t+5
<b><i>Expenses</i></b>						
PEP %	57.7	75.0	81.0	80.7	80.8	74.4
Non-PEP %	52.1	70.2	69.0	62.5	74.3	76.0
<b><i>Profit per employee</i></b>						
PEP %	45.5	53.7	64.4	62.8	64.1	78.1
Non-PEP %	42.2	65.9	54.3	54.8	70.0	55.0
<b><i>Sales/total assets</i></b>						
PEP %	60.7	42.2	39.4	30.3	25.8	23.8
Non-PEP %	48.8	44.7	45.5	40.6	48.3	60.0

**Table 17**

**Industry adjusted change in employment and change in fixed assets comparisons of PEP and non-PEP deals.**

Change in employment is the year on year percentage change in the number of employees. Change in fixed assets is the year on year percentage change in the balance sheet value of fixed assets. The figures show the percentage of PEP and non-PEP deals that had higher Change in employment and higher Change in fixed assets in each of the post going private years relative to the year before going private (higher profit and higher sales to assets in year t+n relative to t-1).

	t0	t+1	t=2	t+3	t+4	t+5
<b><i>Change in employment</i></b>						
PEP %	39.1	27.8	45.5	41.5	41.7	43.3
Non-PEP %	44.2	43.6	54.5	60.0	62.2	88.9
<b><i>Change fixed assets</i></b>						
PEP %	41.4	40.0	42.4	50.8	42.9	40.4
Non-PEP %	44.7	40.7	56.8	46.5	47.1	38.5

**Table 18 Divestment and PEP involvement**

**Panel A**

	Private equity provider involved in deal	
Divestment	No (%)	Yes (%)
No	95.9	54.8
Yes	4.1	45..2
$\chi^2$	23.56***	

**Panel B Value of bids after which divestment took place**

	Median bid value (£m)	Z
Divestment	135.00	3.19***
No divestment	38.95	

\*\*\* - significant at 1%; \*\* - significant at 5%; \* significant at 10%.

**Table 19 z score analysis of PTP deals and PEP and non-PEP deals**

	t-1	t0	t+1	t+2	t+3	t+4	t+5
<b>(i) Whole sample</b>							
PTP median	2.19	1.86	3.45	7.16	5.90	6.49	5.59
Z test t+n v t-1			0.42	0.74	2.15**	2.35**	0.58
% z>t-1 and roce>t-1			27.9	27.4	26.9	28.1	20.6
%z >t-1 and roce<t-1			26.7	26.0	37.3	34.4	34.9
% z <t-1 and roce<t-1			30.2	19.2	20.9	21.9	30.2
% z<t-1 and roce>t-1			15.0	27.4	14.9	15.5	14.0
<b>(ii) PEP/non PEP</b>							
PEP median	0.08	0.80	2.80	2.71	6.19	7.27	8.80
Z test t+n v t-1			0.05	0.24	2.52**	2.01**	0.92
Non-PEP median	4.87	2.94	5.11	9.22	5.18	4.91	0.24
Z test t+n v t-1			0.60	0.71	0.43	1.14	0.26
Z test PEP v non-PEP	1.57	0.52	0.78	1.15	1.27	0.35	0.91
<b>(iii) PEP</b>							
% z>t-1 and roce>t-1			17.0	27.8	17.6	27.3	13.6
%z >t-1 and roce<t-1			38.2	27.8	50.0	39.4	45.5
% z <t-1 and roce<t-1			29.8	16.7	8.8	21.2	22.7
% z<t-1 and roce>t-1			14.9	27.8	23.5	12.1	18.2
<b>(iv) Non PEP</b>							
% z>t-1 and roce>t-1			41.0	27.0	36.4	29.0	28.6
%z >t-1 and roce<t-1			15.4	24.3	24.2	29.0	23.8
% z <t-1 and roce<t-1			30.8	21.6	33.3	22.6	38.1



% z<t-1 and roce>t-1			12.8	27.0	6.1	19.1	9.5
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