SWP 43/90 DO CHANGES IN ORGANISATIONAL STATUS AFFECT FINANCIAL PERFORMANCE?

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1.0 Introduction

Since 1979 the Conservative Government has pursued a policy of moving state assets from the public sector to the private sector. This policy of *privatisation* has captured the imagination of economists and accountants in the UK and also abroad where governments of various political colours are adopting similar programmes (Hemming & Mansoor, 1988). In the USA President Reagan proposed privatising airports and the railways, while in the Soviet Union and the rest of Eastern Europe *perestroika* reflects a desire to move away from state planning to greater dependence upon competitive markets and private enterprise. Recently the UK government has added a further dimension to its privatisation programme by proposing the introduction of quasi-independent agencies to undertake much of the work previously undertaken by civil servants in government departments (HMSO, 1988). Eventually the core civil service may shrink by over 80 percent from around 560,000 to 60,000. Already the Professional and Executive Recruitment Register, the National Engineering Laboratory and the Crown Suppliers, for example, have been placed under the management of such agencies.

Such a widescale reform of the provision of services traditionally supplied by government departments, alongside the mainstream programme of privatisation, which by 989 had seen 64 firms privatised with assets totalling over £26 bn, raises an important question. To what extent does a change in organisational status affect performance and in what ways? Although there has been considerable investigation of the effects of takeovers and mergers on firms within the private sector (e.g. Meeks, 1977) and *some* study of the results of governmental reforms and nationalisation

(e.g. Pryke, 1971), the impact of changes in organisational status within the public sector and involving the transfer of assets across the public-private boundary has been relatively neglected (Kay and Thompson, 1986).

Recent research at the University of York has attempted to remedy this neglect by identifying the precise effects of a change in organisational status on performance and the sources of any performance change.* Earlier papers from this research programme considered performance changes using economic measures, namely labour and total factor productivity and employment functions (Hartley, Parker and Martin, 1990; Parker and Hartley, 1990). This paper reviews the impact of changes in organisational status using a set of standard financial ratios and a sample of UK organisations which experienced status changes in the post-war period. The ratios and sample are detailed in Section 2 of the paper. In Section 3 the hypothesis about the impact of organisational status on performance is set out and Section 4 details the statistical method used. The results are presented in Section 5. Finally, the conclusion, Section 6, summarises the results and outlines their implications for future research and public policy.

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2. The Ratios and Organisations

2.1 *The financial ratios*

In financial accounting, the effects of changes in organisational status on performance are usually considered in terms of financial status (solvency and liquidity), stock market prices (the consequences for shareholders) and performance ratios which relate to how well a business is being run (Reid and Myddelton, 1982, pp.35-7). However, since our study includes organisations which spent some or all of their time in the public sector where there are no traded shares, stock market ratios are inappropriate. Similarly, measures of solvency and liquidity - standard ratios take the form of debt to equity and interest cover - are difficult to interpret when an organisation's finances are underwritten by government and there are no shareholder funds. Therefore this study considers performance ratios only. The specific ratios studied are intended to reflect the quality of management in terms of the efficient use of working capital, fixed assets and profitability. Our data came from each organisation's annual reports and accounts, supplemented where necessary with information from internal accounts and papers.*

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* We would particularly like to thank the HMSO, London Regional Transport and the Royal Mint for giving access to internal papers.

There is a large number of financial ratios covering almost all the various financial aspects of a business which can be computed from annual accounts (Courtis, 1978). However, according to research by Laurent (1979), ten key ratios explained 82 percent of the variance in a complete set of 65 ratios. These ten ratios are:

i. return on capital employed
ii. gearing
iii. management of working capital
iv. fixed asset management
v. revenue to shareholders' funds
vi. quick assets to quick liabilities
vii. stock management
viii. interest cover
ix. reserves to net income
x. revenue to debtors.

We report on five of these ratios, namely profitability, working capital as reflected in stocks and debtors, and fixed assets, (i, iii, iv, vii and x), excluding those which are not meaningful for public sector activities. Their interrelationship is illustrated in Figure 1 with the addition of indicators of labour efficiency. No attempt has been made to judge the significance of non-computed ratios from the significance of the computed ones. Differences in one ratio do not necessarily imply statistically significant differences in related ratios (Bayldon, Woods, and Zafiris, 1984). In more detail, the ratios computed were as follows:

(a) *Percentage return on capital employed (ROCE)*: measured as profit before tax and long-term financing charges in relation to average long-term capital employed (net assets) during each year. This is the most satisfactory measure of profitability for our purposes since it indicates the performance achieved regardless of the method of financing. Sources of finance often changed dramatically following a status change.

(b) *Turnover to average net fixed assets employed per annum*: this ratio indicates how well an organisation uses its physical capacity. The ratio provides information on the productivity of fixed capital albeit in a crude form because assets are valued at written down historic cost in accounts.

(c) *Stocks (including work in progress) to turnover.*

(d) *Debtors to turnover.* Both the stocks and debtors ratios were used to indicate performance in terms of managing working capital ('making capital work harder'). Organisations should attempt to minimise the amount of working capital employed to achieve any given level of activity. End of year stock and debtor figures were used as these are reported in annual accounts, though they may not accurately reflect the average level during the year. Also, low stock and debtors ratios are not unambiguously advantageous. If stock levels are too low the production process could be interrupted and if payment terms are too tight the business may lose sales to competitors offering more favourable credit terms. Both results would have the effect of reducing

profitability. In general, we tkae the view that a decline in these ratios indicates an improvement in performance, although in summarising the results allowance is made for the possibility that a change in these ratios in any direction may reflect improved performance.

A major criticism of politically controlled bodies is that they do not employ optimal amounts of labour. More specifically they employ too much labour which remains underutilised and pay wages above competitive market levels (Parker, 1985; Mitchell, 1988). To test for this two further financial ratios were calculated:

(e) *Labour's share in costs*: this was approximated in terms of wages (and the associated employment costs of national insurance and pensions) in total expenditure. A fall in the wages to expenditure ratio implies a 'labour shake out' and a movement towards market clearing wages.

(b) *Value added per employee*: which is sales revenue (S) minus the cost of bought in goods and services (C)) divided by the numbers employed (N). In the absence of detailed information on the costs of purchases, this was approximated as (P + I + W)/N where P = profit before tax, I = capital charges in the form of interest on long-term loans and W = employees wages. P, I and W were expressed in real terms deflated by the non-food RPI.

It would also have been useful to have analysed the trend in the ratios of overheads, administrative expenses and R & D expenditures in total

expenditure or in relation to sales. These three ratios are likely to be affected by changes in organisational status. For example, administrative and other overheads might be expected to fall after privatisation if previously the organisation was over-bureaucratic (if it was under-managed previously the ratio might rise). Similarly, it is likely that research which did not promise a commercial return would be curtailed as the organisation became more interested in profitability and less interested in political goals. Unfortunately, it proved impossible to obtain sufficient data on these ratios to create reliable series for empirical work.

Figure 1 here

2.2 Data, trends and objectives

Just as indicators of performance need to be selected with care the data used must be appropriate and comprehensive. Continuity of data is a problem in all time series analysis, especially where new accounting methods occur part way through the period studied. Moreover, 'opinion and judgment affect the reported profit and many of the balance sheet items' for all firms (Reid and Myddelton, op. cit., p.44; also Mayer, 1988 for a critical review of accounting practices). Wherever possible, however, a continuous set of data were constructed by adjusting figures for earlier or later years to reflect accounting changes. In some cases it proved impossible to adjust in this way and the ratio is not reported. Also, in our analysis

'extraordinary items', such as revenue from asset sales, were not included where they distorted the performance figures.

The study is primarily concerned with *changes in the trends of financial ratios* associated with an organisational change. Such changes may occur in the same financial year as the organisational change (year t) or at some later date (t+n) owing to time lags affecting the relationship between the status change and performance. Also, performance changes might occur in *anticipation* of an organisational status change (in t-n): a phenomenon which appears to have been associated with privatisation in the 1980s (Hartley, Parker and Martin, 1990). Research into the impact of organisational change must, therefore, identify effects within the time limits t ± n.

Other factors may affect performance around the time of a status change, notably changes in product market competition. Competition is an important incentive to be efficient and, indeed, may be more important than organisational status (Millward and Parker, 1983; Dunsire *et.al.*, 1988). However, in most of the cases studied, significant changes in product market competition did not coincide with the organisational status changes. The exceptions were British Aerospace, London Transport and the HMSO. Nationalisation of the UK aerospace industry in 1977 brought together three main suppliers of airframes and aero-defence equipment; the liberalisation of bus transport in the 1980s led to more competition for London Transport; and for HMSO from 1982 the public procurement of government stationery was opened up to more competition.

Another possible complicating factor is 'objectives'. In principle, a decision on whether performance improved or deteriorated can only be made once an organisation's goals are clarified. For instance, maximising profit conflicts with maximising the volume of sales or sales revenue (Baumol, 1959). Therefore a higher rate of return on capital is not unambiguously a 'good thing'. It depends upon the organisation's overriding objective. In the private sector pursuit of profit is more likely to be a key objective, though it is not necessarily the only one (Williamson, 1964; Marris, 1964). In the public sector the identification of organisational goals is especially relevant when appraising performance because profit may not be a goal at all. For example, according to their statutes nationalised industries were expected to supply 'without undue discrimination' and to 'at least break-even taking one year with another'. They were not expected to profit maximise and often they have been required to pursue other objectives such as maintaining employment, price stability and equity targets (Coombes, 1971; Chester, 1975). A change in a performance ratio following an organisational change may therefore reflect a change in objectives rather than a change in efficiency. This is most likely to be a problem when interpreting rates of return on capital (i.e. profitability). For example, the privatisation of a public sector monopoly might be associated with higher profitability as the privatised firm exercises market power. The other ratios reflect the utilisation of fixed and working capital and labour and are much less ambiguous, even where there is a change in the rationale of the organisation. It was never an objective of a public sector organisation to waste resources, while waste threatens survival under private ownership.

A further point related to objectives concerns the 'effectiveness' of service delivery. Financial performance may rise but this could be at the expense of a reduction in the quality of service. In a private competitive market a decline in the quality of output leads to a loss of market share, but this will not occur where there is a monopoly supplier. Unfortunately, only a small number of organisations provided details of service effectiveness in their annual reports or elsewhere and in no cases in a comparable way for before and after a status change. Hence, it was not possible to test whether financial performance improvements occurred at the expense of service quality. Nevertheless, this is not a major limitation of our study for our sample of organisations is drawn largely from departments and firms which produced and sold products in a competitive market or to government. The major exceptions to this are London Transport and the Post Office's postal and telecommunications businesses.

Finally, trends in the level of macroeconomic activity could be reflected in the time series data used. For example, the sudden downturn in the economy in 1980-81 led to a rise in stocks and debtors and a fall in profitability in the economy. This should be borne in mind when interpreting our results.

2.3 The organisations studied

The organisations studied were the Post Office postal and telecommunications businesses; Her Majesty's Stationery Office; the Royal Ordnance Factories; British Aerospace; Rolls Royce (aero and marine engines); the National

Freight Corporation (later Consortium); London Transport; and British Airways. They were chosen to represent a cross-section of organisations which altered their status within government or across the public-private boundary between the late 1960s and the early 1980s. They include organisations which changed from control by a government department to trading fund or public corporation status, as well as enterprises which experienced a change of ownership (from public to private or vice versa). The organisations, the status changes studied, the dates of the relevant status changes and the direction of the expected change in efficiency are summarised in Table 1.

Table 1 here

The Post Office postal and telecommunications services were controlled by a government department in the UK until 1969 when control was devolved to a public corporation. From well before this date, however, the postal and telecommunications activities had separate accounts and structures. In addition they were subject to different forms of technological change with implications for their costs of production. The financial performance of the two businesses, which were finally divided with the formation of British Telecom in 1971, are studied separately in this paper.

Her Majesty's Stationery Office (HMSO) and the Royal Ordnance Factories changed from being directly controlled by government departments to being trading funds, under the 1973 Government Trading Funds Act, at various

dates between 1974 and 1980. This meant that these organisations were no longer financed out of parliamentary votes and appropriations but became self-financing with a greater degree of managerial independence and responsibility. As trading funds they were expected to operate as commercial enterprises and were set profit objectives. Their employees, however, continued to be civil servants and subject to the pay and conditions of the civil service. Trading funds were intended as a half-way house between direct departmental control and the 'arm's length' relationship supposedly asociated with public corporations (Morrison, 1933). They were expected to provide efficient management of resources while retaining political accountability.

In the 1970s both British Aerospace and Rolls Royce moved from the private to the public sector and in the 1980s back to the private sector. The British Aerospace Corporation was established by the merger of three companies - Hawker Siddeley Ltd.(Aviation and Dynamics), British Aircraft (Holdings) Ltd. and Scottish Aviation Ltd. - under the Aircraft and Shipbuildings Act, 1977. The Corporation was subsequently privatised in February 1981 when 51.6 percent of the shares in the newly formed British Aerospace Plc were sold to private shareholders, workers in the industry and management. The remainder of the shares was sold by government in May 1985. As the government was committed from 1981 not to interfere in the management of the business, 1981 is treated as the date of the status change.

Rolls Royce was taken into the public sector in February 1971 following a financial debacle caused principally by major cost overruns in the

development of the RB 211 series engine (Department of Trade and Industry, 1973). Although not formally nationalised, Rolls Royce became accountable to the Department of Trade and later to the National Enterprise Board in the way that public corporations are generally accountable to government. In May 1987 the company was privatised by a public flotation of shares. As this occurred relatively recently there are insufficient data to draw reliable conclusions about the effect of this event upon performance. The study of organisational change is therefore limited to the state takeover in 1971.

The bank-supported worker and management buy-out of the National Freight Corporation in February 1982 as the National Freight Consortium has often been cited as one of the most successful privatisations of the 1980s. It was also the first and for a long time the only example of privatisation by this method. The NFC was included in our sample to see whether performance improved as dramatically as the appreciation in share values suggests (an over 80 fold rise between February 1982 and the public flotation in February 1989).

A further member of the sample is London Transport which, unlike the other organisations studied, was not affected by a change in legal status. It remained a public corporation throughout the period studied. However, in 1970 it became accountable to the Greater London Council (GLC), whereas previously it had been overseen by the Department of Transport. London Transport remained under the control of the GLC until 1984 and during this period it was affected by political intervention aimed at taking greater account of social goals or externalities (e.g. the 'fair fares' policy).

From 1984, London Regional Transport has operated as a public corporation once again accountable to central government and with a renewed commitment to commercial objectives.

Finally, British Airways (BA) was included to test for 'anticipation effects'. Although it was not privatised until 1987, the original decision to sell-off parts of BA was announced by the Conservative Party before the 1979 General Election and a formal timetable for privatisation was established in 1980. In 1981 Lord King was made chairman of BA with a brief to prepare the business for early privatisation. Subsequently a slump in the airline market, followed by a drawn out legal dispute in the USA associated with the collapse of Laker Airways, led to privatisation being postponed. Given the firm intention to privatise, however, we would expect to find a change in the behaviour of management reflected in superior financial performance from 1979/80, especially after allowing for the effects of the airline recession.

3. The Central Hypothesis

Our basic hypothesis is that performance (P) is a function of organisational status (O) and other influences (eg. competition; the external economic environment) Z:

$$P = f(O, Z)$$

The main arguments supporting the view that efficiency rises as production is moved away from political control and towards the private sector can be found in the *public choice and property rights literature* (Parker, 1985; Mitchell, 1988; Dunsire, *et.al.*, 1988). Public choice theorists argue that public ownership leads to waste and inefficiency as outputs are biased toward political goals and inputs are under-utilised. From an economic point of view, not only may production be *technically* inefficient, in the sense that production is lower than the maximum achievable with given combinations of factors of production; but also factors may not be employed in a way which is *price efficient*. This is illustrated in Figure 2 where Q_o is an isoquant showing levels of equal output but employing different combinations of factors of production. Suppose that the organisation is producing output inefficiently and is at point D. Assuming constant returns to scale, the organisation's technical efficiency (TE) is measured as:

$$TE = OB/OD$$

Only when this ratio is unity (production takes place on the isoquant) is the organisation achieving full technical efficiency. However, this is not equivalent to economic efficiency since the organisation is not employing optimal amounts of factors of production X and Y given their current prices and current technology. The point of price efficiency is where the budget line (which expresses how much of X and Y can be purchased with a firm's current budget for factors of production and thus reflects the relative prices of X and Y) is tangential to the isoquant, Q_o (i.e. point C). Price efficiency (PE) is therefore measured by the ratio:

PE = OA/OB

When this ratio is unity, the firm is employing factors of production efficiently.

Combining the technical and price efficiency measures, *economic efficiency (EE)* can be defined as:

EE = TE.PE = OA/OD

Figure 2 here

Advocates of privatisation maintain that the profit motive leads to economic efficiency. In contrast, nationalised concerns are popularly (if not always fairly) associated with economic inefficiency. As one of the leading advocates of privatisation commented early in the Conservative Government's term of office: 'Nationalised industries are immunised from the process of spontaneous change which competition and fear of bankruptcy impose upon the private sector' (Sir Keith Joseph, January 1980). It is argued that with the possibility of bankruptcy and the ability to benefit directly from higher profits through higher pecuniary incomes, private sector management monitor the activities of employees and utilisation of capital more effectively so as to achieve high technical and price efficiency (Alchian and Demsetz, 1972). An example might be the National Freight Consortium since the management and worker buy-out.

Public limited companies, which are the obvious alternative to public enterprises, also face the threat of takeover by more efficient management if they lose the confidence of their shareholders. The competitive capital market or market for 'property rights' in the private sector is said to act as an important and effective constraint upon managerial non-profit maximising behaviour (Alchian, 1965). In contrast, in the public sector there are no transferable property rights, no takeover threat, management is salaried rather than paid according to profits, and the Exchequer exists as a lender of last resort. Therefore, it is argued that public enterprises are intrinsically less efficient than private firms because they do not face the discipline of a competitive, private capital market. It follows that 'denationalisation restores market disciplines' (Heald and Steel, 1986, p.68). The fact that in the run-up to privatisation firms must create 'a commercial track record', implies that under public ownership they did not have such a record (Hyman, 1988, p.126).

Efficiency will often be most at risk where there is direct political control since the organisation is likely to be managed with a view to meeting political and social objectives. Hence as we move away from direct departmental control to provision through trading funds and public corporations we would expect efficiency to increase. Certainly, the rationale behind establishing public corporations was precisely to limit political intervention, introduce commercial goals and provide incentives for managerial efficiency (Morrison, 1933). Similarly, governments, Conservative and Labour, have justified the establishment of trading funds and other agencies on the same grounds. Stephen Littlechild, however, warns in relation to organisations which retain some government ownership that

'....as long as ultimate control lies with government, one cannot realistically hope to avoid all the problems.....'(Littlechild, 1981, p.14). It seems that full efficiency gains require full privatisation. This paper uses financial perfc ance ratios as indicators of efficiency.

Our central hypothesis is therefore that as organisations in the public sector move away from direct political control and Exchequer financing towards more independent and commercially-minded management financial performance is expected to improve. This should show up particularly when an organisation is privatised but should also be evident even when organisations remain in the public sector and achieve an 'arm's length' relationship from government (for a fuller discussion of the central hypothesis and its rationale see Dunsire *et.al.*, 1988).

Turning specifically to the financial performance ratios, their expected directions of change, based on the central hypothesis, are summarised in Table 2. In general, the expectation is that financial performance will have improved in those organisations which moved away from direct political control and deteriorated in those organisations which moved towards more political control. The use of a number of financial ratios, however, raises a problem of interpretation. It may not follow that all the ratios move in a consistent manner. Some may suggest improved efficiency, while others imply a decline in efficiency or appear to be unaffected by the status change. This will be commented upon further when the results are reported. Also, a further limitation lies in the use of financial ratios to reflect changes in economic efficiency. Financial ratios may not adequately capture economic efficiency as defined earlier. They do, however, provide some

insight into how well an organisation is minimising its costs of production for any given output and the results in this paper complement earlier productivity results (Parker and Hartley, 1990; Hartley, Parker and Martin, 1990).

4. Statistical method

The statistical results for each of the performance measures are presented at two levels. Initially, average figures for the four years before and the four years following the status change are reported. A four year period was selected as this seemed to provide a long enough period to capture 'leads' and 'lags' in performance changes, but was not so long that there was a major risk of reflecting performance effects that were independent of the status change. However, where the four year averages appeared to be unduly distorted by 'freak' years or where there was a secular improvement or deterioration in performance immediately either side of these periods, this is discussed.

The possibility exists that a rise in average performance is not statistically significant. Also, the four year averages might merely reflect long-term trends in performance independent of the status change. For example, higher average profitability in the four years following a status change might simply reflect a continuing upward trend in profitability which was unaffected by the status change. To test for this, an analysis of covariance model was used which took the general form:

$$Y_i = a + b_{ti} + DV + m_i$$

where Y_i is a vector of performance measures; t is time; DV is a binary (or dummy) variable (0,1) for the status change; and m_i is a normally distributed error term with a mean value of zero and a constant conditional variance. The dummy indicates by how much the mean value of Y_i changes with the status change, with other factors affecting performance over time reflected in the time trend, t (for further details of the method see Kmenta, 1971, pp.409-30). The coefficient on DV was then subjected to a t test for significance. Each financial ratio was regressed against time and the binary variable for status change, or where an organisation underwent two relevant status changes in our period two binary variables appropriately defined. In all cases care was taken to identify multicollinearity between time and the binary variable. Where this proved to be a problem, a two stage process was adopted in which the performance ratios were regressed first against time and then if the time variable was statistically insignificant against the dummy variable separately. Also, an interaction dummy was subsequently applied to the time variable and where this helped to clarify the direction of change the result is reported.

5. The Results

Four year averages for before and after the status change for each of the performance measures are reported in Table 3 and the analysis of covariance results are reported in Table 4.*

Beginning with London Transport, our central hypothesis predicts that the status change from central government accountability to control by the GLC in 1970 should have led to a deterioration in financial performance. Similarly, the further change in status in 1984 in the reverse direction should have led to an improvement in performance. However, our four year averages suggest that after 1969 all of the financial ratios improved. There was a lower rate of increase in the stocks ratio, a fall in the debtors and wages ratios and an improvement in sales to fixed assets, profitability and value added per employee. Testing this using the covariance model confirms the improvement for the stocks ratio (though only at the 10 % level) but not for debtors where the dummy variable, DV1, is statistically insignificant. Analysis of the data confirms that the result for the debtors ratio occurs because of sharp fluctuations in the ratio in the early to mid-1970s. This was highlighted when an interaction binary term was applied to the time trend along with the usual binary dummy. The result was a negative and significant status change dummy (-0.23DV1,

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* All dates refer to the accounting year ending in that calendar year. For example, for the HMSO 1977-80 refers to the accounting periods year ending 31 March 1977 to year ending 31 March 1980.

t=2.14) with a positive and significant interaction term (0.01DV1t, t=2.30). Similarly, the dummies in the equations for the growth of value added and the wages to expenditure ratios are not statistically significant. The covariance results for value added reflect the slow growth in value added between 1974 and 1979 (figure in parenthesis Table 3) and for wages, a stagnant wages ratio for much of the 1970s. The fixed assets ratio improved over time but was not significantly affected by the status change. As for profitability, there is no evidence of any trend over time; nor is there any indication of a significant improvement in profitability associated with the status change.

Moving to the 1984 status change for London Transport, the averages in Table 3 confirm the expected improvement in performance in terms of stocks, wages and sales to fixed assets but not in terms of of debtors, profitability and value added. The analysis of covariance results (DV2 Table 4) confirm the improvement for sales to fixed assets and stocks but not for wages, where the decline in the ratio appears to be the result of a long term trend independent of status changes. In the case of the fixed assets ratio the improved performance at the time of the status change was followed by a slight deterioration. This was captured by introducing an interaction dummy which had a negative coefficient and was statistically significant (2.43 DV2, t=3.16, -0.03 DV2t, t=3.11.). Also, the covariance results show that the second status change was associated with the expected improvement in the debtors ratio. The debtors ratio rose after 1983 but fell from 1986 and this is reflected in the results. Turning to value added, the average percentage figures and the covariance result are affected by a large improvement in performance in the two years before the

status change and a deterioration in 1985. Comparing the periods 1978-81 and 1982-86, there was a sharp rise in value added per employee (figures in parenthesis Table 3).

Further investigation of the performance measures which appear to have moved contrary to expectation or which appear to have been unaffected by the 1984 status change reveals that London Transport's performance began to improve from 1980 and deteriorated slightly in 1984/85. Since the corporation was not earmarked for reorganisation as early as 1980 the improvement was possibly a feature of the 'Thatcher factor', which seems to have led to a general improvement in the performance of public enterprises in terms of productivity and profitability (H.M. Treasury, 1987). However, this improvement does not appear to have produced the expected improvement in profitability.

For the HMSO which became a trading fund in 1980, the stocks ratio and profitability improved as our central hypothesis predicts, but the other ratios moved contrary to expectation. Indeed, the analysis of covariance procedure suggests that the status change caused a statistically significant deterioration in the debtors and wages ratios. However, earlier analysis of productivity in the HMSO (Parker and Hartley, 1990) has revealed that economic performance in the HMSO improved sharply from 1982 not 1980. This was also the case for the debtors and wages ratios, implying some delay in management getting to grips with costs. The averages for 1983-86 are shown in Table 3 in parentheses. In the case of sales to fixed assets, the status change appears not to have reversed a general deterioration in performance over the period studied. Also, the sharply

improved rate of return on capital was not sustained to the end of our period. By 1987 it had returned to its pre-1980 level; the deterioration is reflected in the negative coefficient on the time trend variable (Table 4).

The National Freight Corporation's transfer to the private sector in 1981 had been hailed as 'perhaps the greatest quantifiable success story in the privatisation programme' (Veljanovski,1987, p.136). The results in Tables 3 and 4 confirm a rise in profitability after the status change and this prompted the sharp appreciation in the price of NFC equity in the 1980s. There was also an improvement in the use of labour as reflected in the wages ratio and the covariance result for wages/expenditure. However, initially value added per employee deteriorated, as evident from thi figures in Table 3, and the subsequent recovery (figure in parenthesis) appears to be part of a longer-term trend rather than related to the status change. In general, value added rose over time as reflected by the coefficient on the time trend variable in the covariance model. Turning to the other ratios and their relationship to privatisation, the change in the debtor ratio was not statistically significant, while there was some suggestion that the trend in the stocks to sales and net fixed assets ratios actually deteriorated.

In the case of the Post Office telecommunications and postal businesses, transfer from government department control to public corporation status in 1969 was intended to lead to improved performance. This is not borne out, however, for the telecommunications business. The sales to net fixed assets, value added per employee and profitability ratios rose over the period studied but seem to have been broadly unaffected by the status

change (Table 4). Also, the average for the debtors ratio (Table 3) was biased downwards by an especially good performance in the year to March 1972, in the previous two years following the status change the debtors ratio had risen (figure in parenthesis). This is reflected in the analysis of covariance results where the status change dummy is positive, though statistically significant only at the 10% level. There is evidence that the status change was associated with a lower wages ratio as expected.

In the postal business the wages ratio, which was rising throughout most of the the period studied, also fell immediately following the status change, but this improvement proved temporary. The ratio began to rise again from 1971. The sales to fixed assets ratio which rose over time actually deteriorated in the years immediately after 1969. In contrast, the stocks ratio seems to have declined as expected and the profitability and value #added per employee ratios seem to have been unaffected by the status change (Table 4).

British Airways was included in the sample of organisations specifically to test for anticipation effects. Interestingly, all of the ratios in Table 3 show a marked improvement in performance following the 1980 announcement of future privatisation, with one important exception, namely profitability. However, in the early 1980s, average profitability was reduced by a loss in the year to March 1981 at the height of the airlines recession. Taking the years 1982-85, the average rate of return soars to 21.2 per cent and value added per employee increased by an average rate of 3.3 percent per annum, after declining in earlier years (figures in parentheses Table 3). The analysis of covariance results support the view that the anticipation of

privatisation led to a rise in overall performance especially after 1983, once British Airways had adjusted to diffcult trading conditions. None of the financial ratios deteriorated and improvements in the stocks, profitability and value added ratios appear to have been associated with the status change.

According to our central hypothesis the state takeover of Rolls Royce early in 1971 should have led to a deterioration in performance. In fact, performance improved. There is some uncertainty about the the stock ratio but when the ratio is correlated with time as well as a dummy for the status change (Table 4) it appears to have improved. Almost all of the other ratios changed contrary to expectation with only the rise in the sales to fixed assets ratio not identified with the state takeover. At first blush it appears, therefore, that the Rolls Royce case completely contradicts our central hypothesis. The improved performance may, however, be explained by the nature of the state takeover, which arose out of the financial collapse of Rolls Royce. The parlous state of the company's finances necessitated a major overall of its practices. Also, the improved performance did not last. From the mid-1970s a number of indicators deteriorated. Taking the four accounting years ending 1975 to 1978 the average ratios were as follows:

% change in stocks/turnover	+7.6
% change in debtors/turnover	-4.5
% wages/expenditure	34.5
Sales/net fixed assets	7.3

% rate of return on capital	+3.6
% change in value added	+0.1

Turning to the Royal Ordnance Factories, the introduction of trading fund status was expected to lead to an improvement in financial performance and this occurred. With the exception of the wages to expenditure ratio, all other indicators registered statistically significant improvements following the status change.

Finally, British Aerospace underwent two relevant status changes, namely nationalisation in 1977, where a fall in performance is predicted, and privatisation from 1981, which should have led to a performance recovery. The results, however, provide a confusing picture. The four year averages reported in Table 3 suggest that the stocks ratio rose following nationalisation and declined albeit marginally after privatisation, as expected, and that the debtors ratio also improved after 1981. But the analysis of covariance results in Table 4 do not support these conclusions. Also, in Table 3 with the exception of value added the other ratios moved contrary to expectation. Profitability, sales to fixed assets and wages to expenditure all *improved* after nationalisation and after 1981 profitability actually declined. The improvement in the wages ratio after 1977 does appear to be statistically significant but the other results are not supported in the covariance model (Table 4). The failure of British Aerospace to raise profitability after privatisation in 1981 is at first surprising but might be explained by launching costs for civil aircraft development and tighter cost control on Ministry of Defence contracts in the 1980s. Finally, the improvement in sales to fixed assets and value

added per employee ratios identified in Table 3 appear to be more associated with trends over time than either of the two status changes.

Table 5 summarises the results for the nine organisations based on the covariance results. In terms of the central hypothesis few ratios changed contrary to expectation though a large number were unaffected by the status change. To provide a guide, albeit crude, to the overall impact in each case, each of the financial ratios has been weighted equally to derive the 'Net Total' column. Where performance improved measured by a particular ratio, this was given a figure of 1. Where it deteriorated a figure of -1. A net total of greater than zero therefore means that more financial ratios improved rather than deteriorated. A figure of zero means that improvements in some ratios were offset by a deterioration in an equal number of ratios. A negative total means that more ratios deteriorated than improved. Only the privatised British Aerospace has a negative net total contrary to expectation and in this case only because of a deterioration in the stocks ratio. As indicated earlier in this study, changes in stocks and debtors ratios should be treated with special care as the direction of change associated with an improvement or deterioration in performance is not certain. An alternative view is to interpret *any* change, in whatever direction, in the stocks and debtors ratios as evidence of improved performance. The final column in Table 5 adopts this approach.

It is important to stress that the 'Net Total' is merely a crude guide for it implies an equal weighting of ratios. Obviously, this is controversial. Referring to the ratios structure in Figure 1, profitability lies at the apex and the other ratios shed light upon the source of any changes in

profitability. Therefore it can be argued that profitability should be taken as the *key* measure of financial performance. It should not be weighted equally. The problem in adopting such an approach, however, lies with changes in objectives, a subject already discussed. All of our sample spent at least some time in the public sector where other goals may have been more important than profitability. Changes in performance measured mainly in terms of changes in profitability could therefore reflect changes in objectives. By looking equally at the other financial ratios, a more complete appraisal of performance is obtained and one not so obviously biased by objectives. Nonetheless, it will be noted from Table 5 that in five of our cases profitability improved (although for Rolls Royce contrary to expectation) and in no cases did it decline following the status change.

6. Conclusions

Our central hypothesis was drawn from the public choice and property rights literature and reflects the rationale behind the actions of governments in the 1980s in privatising public sector assets and in establishing agencies within government. The hypothesis stated that removing the provision of goods and services from direct political control improves economic performance. This was tested using a number of standard performance measures based upon accounting ratios for a sample of nine organisations which had experienced status changes between the 1960s and 1980s.

The financial ratios did not provide a consistent set of statistically significant results for any of our organisations. This in itself is

interesting for it suggests that studies which test for performance changes using only a narrow base of financial performance measures, notably profitability (cf. Hamilton, 1971), must be interpreted with care. The results may be biased by the performance measures selected for study. Despite the lack of consistency, however, it does appear that overall our hypothesis was supported by the results of the organisational changes which affected London Transport in 1984, the Post Office postal service and more especially, British Airways and the Royal Ordnance Factories. In contrast, the picture for the HMSO and the Post Office telecommunications business is less clear, while the results for London Transport in 1970, British Aerospace in 1976 and more especially Rolls Royce are contrary to expectation. In the latter case, however, the 'shock effect' of the 1971 financial collapse and the need to rebuild the company's finances rather than state takeover may well have produced the marked improvement in almost all of the financial ratios studied. From the mid-1970s there was a noticeably sharp decline in the performance of Rolls Royce which may reflect a delayed effect of state control. The perverse results for British Aerospace are more difficult to explain, although they may reflect changes in the terms of government defence contracts and stages in product development.

Organisational status changes in the direction of privatisation do not appear, therefore, to *guarantee* improved performance nor does nationalisation, it seems, necessarily worsen performance in terms of the financial ratios studied. Performance appears to result from a complex set of factors and not simply ownership; a viewhat will not seem as strange to organisational theorists as to public choice and property rights

economists (Perry and Rainey, 1988). This conclusion has obvious relevance to public policy in the UK and elsewhere at a time of major reorganisation in the public sector. Also, our findings suggest that a future research agenda should address what these other factors are that affect performance. If establishing agencies within government and privatisation are not sufficient, what other changes should be instituted at the time of organisational change - perhaps more competition, new management or incentive-type employment contracts? Here there is scope for researching what happens at the organisational level *within* firms if we are truly to understand the impact of organisational status upon performance.

Figure 1

Structure of Ratios

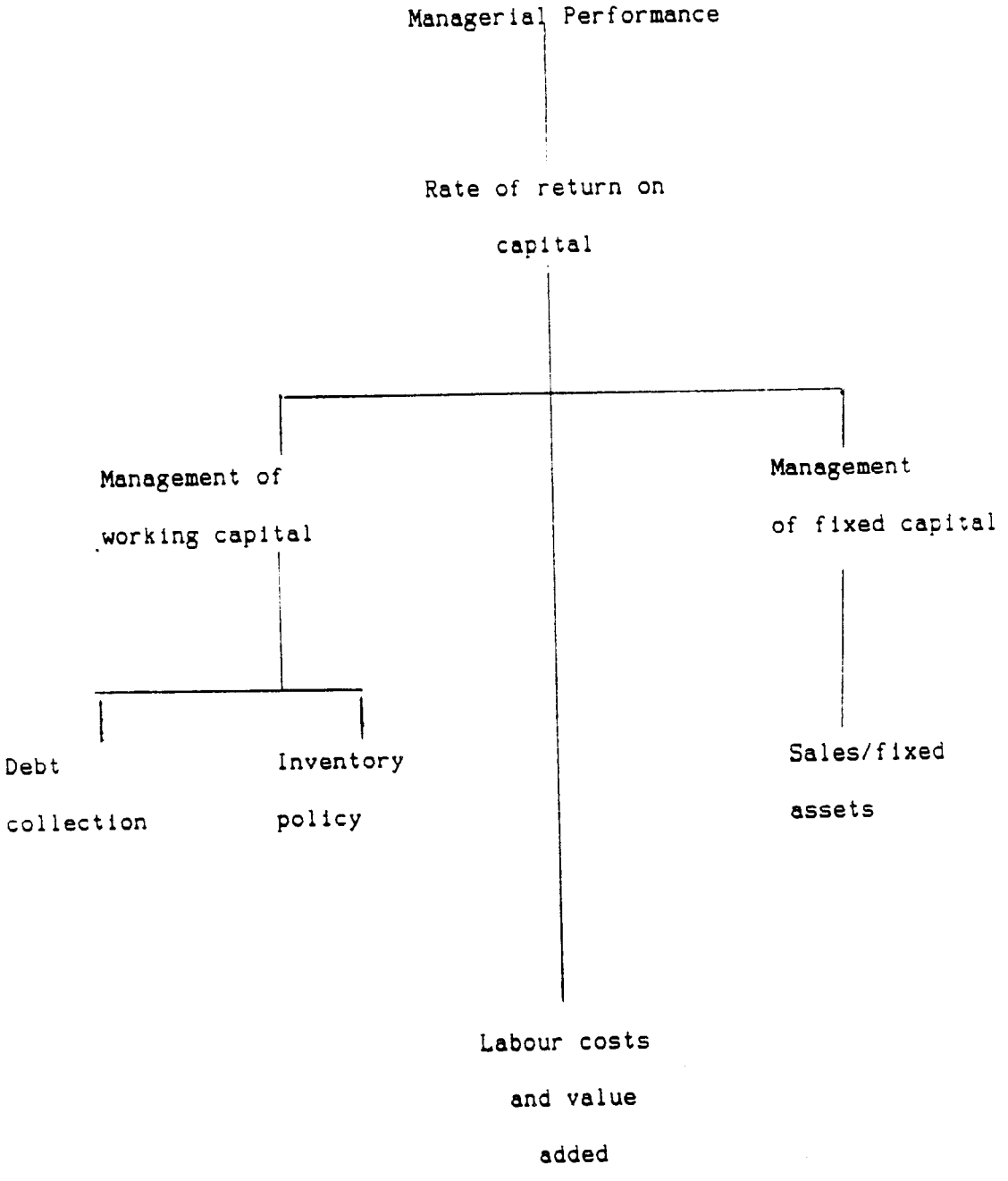

Figure 2

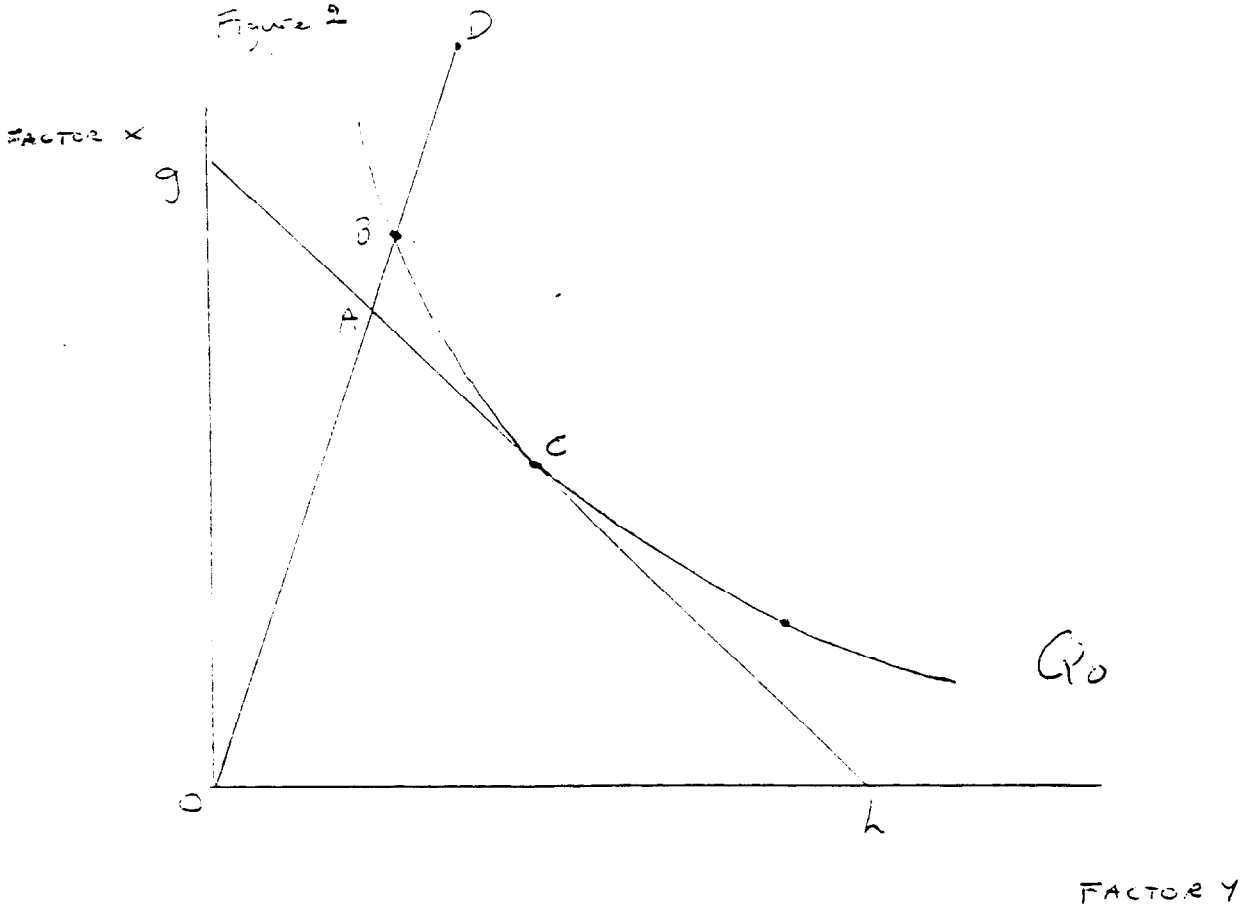

Table 1 **Organisational Status Changes**

Organisation	Type of Change	Date	Prediction of change in efficiency
Post Office postal	government department to public corporation	April 1960	Improvement
Post Office tele-communications	government department to public corporation	April 1969	Improvement
HMSO	government department to trading fund	April 1980	Improvement
Roval Ordnance	government department to trading fund	July 1974	Improvement
British Aerospace	public limited company to public corporation	April 1977	Deterioration
British Aerospace	public corporation to public limited company	Feb. 1981	Improvement
Rolls Royce	public limited company to public corporation	Feb. 1971	Deterioration
National Freight Corporation	public corporation to public limited company	Feb. 1982	Improvement
London Transport	public corporation to (local) government department	Jan. 1970	Deterioration
London Transport	(local) government department to public corporation	June 1984	Improvement
British Airways	public corporation to public limited company	From 1979 (anticipatory)	Improvement

Table 2 Hypotheses on Financial Performance

	A	B
Financial ratio:	Expect ratio to:	
Profit/net assets	Fall	Rise
Sales/net fixed assets	Fall	Rise
Stocks/sales	Rise	Fall (1)
Debtors/sales	Rise	Fall (1)
Wages/expenditure	Rise	Fall
Value added per employee	Fall	Rise

Column A applies to those organisations which our central hypothesis predicts would have suffered a deterioration in financial performance following the status change studied i.e. Rolls Royce (1971), London Transport (1970) and British Aerospace (1977).

Column B applies to those organisations which our central hypothesis predicts would have experienced an improvement in financial performance following the status change studied i.e. London Transport (1984), British Aerospace (1981), National Freight Consortium (1972), Post Office postal and telecommunications services (1969), HMSO (1980), the Royal Ordnance Factories (1974) and British Airways (from 1979).

Note:
(1) The direction of change in the stocks and debtors ratios signalling an improvement or deterioration in performance is not clear. This point is taken up in the conclusions to the study.

Table 3: Changes in the Financial Ratios

		% change in stocks/sales		% change in debtors/sales		% wages/ expenditure		sales or output net fixed assets		% profit*		% change in value added	
	Date	A	B	A	B	A	B	A	B	A	B	A	B
London Transport	1970	2.4	1.3	10.6	-3.8	86.0	75.0	0.35	0.38	-0.1	1.0	0.7	5.9 (0.8)[1]
London Transport	1984	7.5	-12.2	2.0	23.7	71.8	65.3	0.75	0.81	-0.7	-1.2	6.3 (-1.9)[2]	1.7 (5.6)[3]
HMSO	1980	-3.2	-15.8	8.2	16.2 (-4.2)[4]	15.9	20.2 (17.0)[4]	14.4	11.9	9.4	20.5	n.a	n.a
NFC	1982	3.0	19.0	2.8	-0.7	39.8	37.4	4.35	4.58	7.1	19.6	5.4	2.5 (6.4)[5]
Post Office (telecom)	1969	n.a	n.a	7.6	3.8 (21.5)[6]	62.6	54.0	0.3	0.3	7.7	8.6	2.3	6.6
Post Office (postal)	1969	3.3	-4.2	n.a	n.a	75.0	71.5	2.7	2.3	9.5	6.2	4.2	5.8
British Airways (anticipation)	1980	0.5	-16.0	0.8	-2.2	34.8	32.9	1.9	2.21	13.5	11.9 (21.2)[7]	-4.3	-0.6 (3.3)[7]
Rolls Royce	1971	-2.5	-0.5 (7.6)[8]	-1.0	-1.5 (-4.5)[8]	44.1	36.6 (34.5)[8]	4.5	5.6 (7.3)[8]	1.0	14.4 (3.6)[8]	3.2	5.3 (0.1)[8]
Royal Ordnance Factories	1974	9.8	-15.5	n.a	n.a	46.1	47.9	2.3	5.2	0.2	20.8	3.5	12.2
British Aerospace	1977	1.8	5.5	n.a	n.a	41.7	34.8	4.9	7.6	21.5	23.4	4.3	2.1
British Aerospace	1981	5.5	4.6	11.0	-2.6	34.8	34.5	7.6	8.1	23.4	15.5	2.1	8.2

* percentage rate of return on net assets

Table 4: Analysis of Variance & Co-variance

	Stocks/Sales			Debtors/Sales			Wages/Expenditure			Sales or Output/ net fixed assets			Profitability			Value Added		
	t	DV1	DV2	t	DV1	DV2	t	DV1	DV2	t	DV1	DV2	t	DV1	DV2	t	DV1	DV2
London Transport	0.01	-0.02#	-0.02*	-0.01	0.01	0.03**	-0.56*	3.29	-2.50	0.18**	0.06	0.15#	-0.01	0.01	0.01	0.01*	0.01	-0.01
	(0.50)	(1.72)	(2.17)	(0.53)	(0.02)	(3.77)	(2.45)	(1.33)	(0.99)	(2.95)	(0.97)	(2.17)	(0.82)	(0.02)	(0.43)	(5.00)	(0.01)	(1.11)
HMSO	-0.01#	-0.07*	-	-0.01*	0.12**	-	-1.01**	8.52**	-	-0.62**	-0.27	-	-0.02**	0.17**	-	n.a	n.a	-
	(1.86)	(2.64)	-	(3.10)	(5.90)	-	(4.42)	(4.85)	-	(4.22)	(0.26)	-	(3.61)	(4.39)	-	n.a	n.a	-
NFC	0.01*	0.01#	-	0.01	0.01	-	-0.02**	-0.15*	-	0.25**	-0.75#	-	0.01	0.18*	-	0.01**	0.01	-
	(2.98)	(2.08)	-	(0.83)	(0.58)	-	(3.97)	(2.88)	-	(7.96)	(2.00)	-	(0.71)	(2.48)	-	(4.26)	(0.54)	-
Post Office (telecom)	n.a	n.a	-	-0.01	0.08#	-	-3.55#	-0.85**	-	0.01**	-0.03	-	0.01**	-0.01	-	0.01**	-0.01	-
	n.a	n.a	-	(0.07)	(1.92)	-	(2.06)	(5.54)	-	(2.98)	(0.59)	-	(3.52)	(0.37)	-	(7.52)	(0.32)	-
Post Office (postal)	-0.01	-0.01*	-	n.a	n.a	-	0.76**	-5.78*	-	0.16**	-1.25#	-	0.01#	-0.01	-	0.01**	-0.01	-
	(0.72)	(2.13)	-	n.a	n.a	-	(4.13)	(2.58)	-	(2.93)	(1.89)	-	(1.85)	(0.20)	-	(5.72)	(0.76)	-
British Airways	0.01	-0.01**	-	-0.01	-0.01	-	-3.17**	3.65	-	0.11**	0.06	-	-0.01	0.23**	-	-0. 01**	0.01*	-
	(0.09)	(13.33)	-	(0.07)	(0.93)	-	(4.73)	(0.72)	-	(7.70)	(0.42)	-	(0.85)	(4.02)	-	(5.75)	(2.54)	-
Rolls Royce	0.02**	-0.21**	-	0.01	-0.12**	-	0.04	-7.39*	-	0.16#	0.07	-	-0.01#	0.13*	-	0.01	0.01#	-
	(3.67)	(3.31)	-	(0.86)	(4.84)	-	(0.14)	(2.19)	-	(1.79)	(0.06)	-	(1.79)	(2.20)	-	(1.70)	(1.73)	-
Royal Ordnance Factories	-0.02	-0.17*	-	n.a	n.a	-	-0.88*	3.36	-	0.01	2.79*	-	0.01	0.14**	-	0.01	0.01*	-
	(1.70)	(2.64)	-	n.a	n.a	-	(2.32)	(0.88)	-	(0.10)	(2.86)	-	(0.01)	(3.01)	-	(1.55)	(2.19)	-
British Aerospace	-0.01	0.01	0.06#	-0.01*	n.a	0.03	0.01	-0.09**	-0.03	0.29**	0.83	-0.61	0.01	0.03	-0.05	0.01**	-0.01	-0.01
	(0.69)	(0.27)	(2.04)	(2.49)		(1.15)	(1.71)	(2.97)	(1.23)	(3.23)	(1.23)	(0.91)	(0.72)	(0.68)	(1.42)	(5.44)	(1.62)	(0.68)

Notes:

(i) Results are reported to 2 decimal places.

(ii) ** significant at 1% level; * significant at 5% level, # significant at 10% level, using two-tail tests.

(iii) n/a indicates insufficient data to calculate

(iv) Figures in brackets are t-ratios

(i) A 4 years before status change

(ii) B 4 years after status change

(iii) n/a indicates insufficient data to calculate

(iv) 1 average for 1974-79
2 average for 1978-81
3 average for 1982-86
4 average for 1983-86
5 average for 1983-86
6 average for 1969-71
7 average for 1982-85
8 average for 1975-78

TABLE 5 SUMMARY OF RESULTS

Organisation	Date of status change	Stocks ratio	Debtors ratio	Wages ratio	Fixed Assets ratio	Profitability ratio	Value added ratio	Net Total	Net Total treating any change in the stocks and debtors ratios as improvements
London Transport	1970	roved	Mixed result	No change	No change	No change	No change	1	1
London Transport	1984	Improved	Deter-iorated	No change	Improved	No change	Mixed result	1	3
HMSO	1980	Improved	Deter-iorated	Deter-iorated	No change	Improved	n/a	0	2
National Freight	1982	Deter-iorated	No change	Improved	Mixed	Improved	No change result	1	3
Post Office telecommunications	1969	n/a	Deter-iorated	Improved	No change	No change	No change	0	2
Post Office postal	1969	Improved	n/a	Improved	Deter-iorated	No change	No change	1	1
British Airways	1980	Improved	No change	No change	No change	Improved	Improved	3	3
Rolls Royce	1971	Improved	Improved	Improved	No change	Improved	Improved	5	5
Royal Ordnance	1974	Improved	n/a	No change	Improved	Improved	Improved	4	4
British Aerospace	1976	No change	n/a	Improved	No change	No change	No change	1	1
British Aerospace	1981	Mixed result	No change	No change	No change	No change	No change	0	0

Notes:

n/a: not available

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