

**SWP 37/90 ORGANISATIONAL STATUS, OWNERSHIP
AND PRODUCTIVITY**

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by

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1. Introduction

In recent years Government economic policy in the UK and elsewhere has been guided by the belief that changing organisational status improves performance (Hemming and Mansoor, 1988). This is most evident in the case of the UK privatisation programme. By late 1989, 64 organisations had been privatised involving the sale of over £26 bn of public sector assets to the private sector. One major reason for privatisation is the belief that resources are more efficiently used in the private sector. It has been claimed that "... privatisation involves more than the simple transfer of ownership. It involves the transfer and redefinition of a complex bundle of property rights which creates a whole new penalty-reward system which will alter the incentives in the firm and ultimately its performance" (Veljanovski, 1987, pp 77-8). In the Conservative party's 1987 Election Manifesto reference was made to productivity soaring in the newly-privatised companies.

The privatisation programme in the UK, however, is now attracting critical comment. One review concluded that the Government's desire to sell the industries quickly and raise revenue from asset sales to balance the government budget, alongside other goals such as widening share ownership, has meant that: "The outcome is that no objectives are effectively attained, and in particular that of economic efficiency - which is at once the most important of these and the most difficult to obtain - has systematically been subordinated to other goals" (Kay and Thompson, 1986, p.61). The attention of economists has begun to focus on the role of competition in the product market rather than ownership *per se*. The importance

of competition over ownership in determining efficiency is highlighted in empirical studies of public vs private efficiency (Millward and Parker 1983). Also, we have been reminded that: "Selling a government firm makes no difference to the competitive environment in which it operates; ownership and competitive structure are separate issues." (Forsyth, 1984 p.61). Nevertheless, the British Government continues to hold firmly to the belief that changing organisational status leads to improved performance. To complement its extensive privatisation programme, early in 1988 it announced the introduction of a major overhaul of the civil service as recommended by the Government's efficiency adviser (Sir Robin Ibbs, 1988). This involves the establishment of a number of agencies in place of direct departmental control. Amongst the first to be earmarked were the Department of Transport vehicle inspectorate, the Companies Registration Office, the Employment Service and the defence non-nuclear research establishments. Agencies are designed to obtain better value for money by developing greater managerial responsibility and increasing commercial independence. If completed the reform will transfer around 450,000 of the 600,000 strong civil service into governmental agencies.

The idea that public sector organisations working to some degree at "arm's length" from government outperform government departments is not new. In the post-war period public corporations (including nationalised industries), various "quangos" and trading funds were established in the UK. However, the record of public corporations is now considered disappointing (Pryke, 1981) and "quangos" have been criticised for being unaccountable and inefficient (Holland and

Fallon, 1978). Clearly there is a need to investigate the counter claims surrounding organisational status and performance.

This paper studies the performance of ten UK organisations which have been subject to one or more changes in status. These embrace changes within the public sector involving government departments, trading funds and public corporations, as well as changes in ownership between the public and private sectors. Performance is assessed in terms of production efficiency reflected in changes in the rate of growth in both labour and total factor productivity. Other performance measures based upon employment functions and standard accounting ratios are reported elsewhere (Hartley and Parker, 1990). In section 2 of the paper a model of status change and performance is developed for testing and the organisations studied are reviewed. Section 3 details the performance measures used and reports the results. Section 4 reconciles our results with national trends in productivity. Changes in performance over time may merely reflect movements in national productivity resulting from macroeconomic policy and political changes (e.g. the 'Thatcher factor'). In section 5, alongside conclusions, the consequences of our findings for policy and future research are briefly considered.

2. Modelling status change

This study investigates the effects of both changes in organisational status within the public sector and between the public and private sectors. Since the relevant analytical framework has been presented elsewhere (Dunsire, *et al*, 1988) it is outlined only briefly here. In Figure 1, on the west to east axis

are positioned certain organisational forms intended to represent the main types of organisations in the public and private sectors - government department, quasi-governmental agencies (eg trading funds), public corporations, hybrids, private sector plcs (public limited companies) and owner-managed firms. These are broad categories but further subdivision is unnecessary for our analysis.

(Figure 1 Here)

In the far west in Figure 1 lies the government department. Its main feature is direct political control of services which critics, including public choice theorists, argue leads to short-term political goals, damaging political intervention in decision-making and bureaucratic self-seeking (Mitchell 1988). The next category is non-governmental agencies, which have some degree of autonomy from government. A number of UK trading funds were established under the 1973 Government Trading Funds Act. They remain responsible to a government minister but are expected to finance their operations commercially by charging for goods and services instead of being dependent, like government departments, on annual Parliamentary votes and appropriations. Non-governmental agencies were set up to reduce political intervention and to encourage a more commercial and cost efficient use of resources. Similarly, public corporations were established to operate even more at "arm's length" from government: a constitutional arrangement which was intended to combine efficient management with accountability (Morrison, 1933). Our hypothesis, therefore, in terms of Figure 1 is that a *movement eastward within the public sector raises efficiency: hence a trading fund is expected to be more efficient than a government department and a*

public corporation is deemed to be superior to a trading fund.

Turning to the private sector, in the far east in Figure 1 lies the sole proprietor business where property rights are unattenuated, implying maximum incentives to achieve profit by operating efficiently. Under this broad heading we can also include private companies and partnerships where there is a negligible principal and agent problem. Moving west, the next category is the public joint stock company where ownership and control are divorced but the existence of a competitive capital market, and especially the threat of takeover, may constrain managerial discretionary (non-profit) behaviour. Finally, at the interface between the private and public sectors is a hybrid grouping which, as the name suggests, includes those organisations which do not neatly fit into the other categories. Examples include not-for-profit organisations such as charities, clubs, churches and mutuals; and private sector companies heavily dependent upon public sector orders or financing. Government contracts of the "cost-plus" type may dull incentives to be efficient (Hartley 1987). Although we are not concerned with testing the effects of changes in organisational status within the private sector, our scheme suggests that organisational changes will have their most profound effect on performance the further the distance on the west to east axis organisations move.

In addition to formal organisational status, another possible factor determining performance is competition in the product market. Indeed, critics of current UK policy have stressed the role

of competition. Market structure is important since a firm in a highly competitive product market is unable to sell goods and services above the prices set by competitors and survive. This is vividly illustrated by the economist's model of perfect competition; though lesser forms of competition may produce similar inducements to be efficient. By contrast those firms operating in markets where competition is restricted may take on characteristics associated with the economist's models of oligopoly or monopoly. A firm may be inefficient and able to remain in business if the market is neither contested nor contestable.

In practice, certain government departments, agencies and corporations hold monopoly rights over the provision of goods and services, which is expected to reduce both allocative and productive efficiency. Suggestion that government departments and agencies should compete to raise efficiency has met with only a limited response in the UK, where policy has concentrated instead upon privatisation. Of course, some public sector activities have operated in competitive markets (e.g. shipbuilding).

In Figure 1 movement down the north-south axis represents an increase in the degree of competition, with monopoly and perfect competition identified as extremes. Thus in Figure 1 the performance of organisations is determined by their organisational status and the product market in which they operate. The change in an organisation's position within the ABXY space can now be plotted and hypotheses regarding performance changes established. Our central hypothesis is that an organisation "improves" its performance as its status is changed on a west to east and/or

north to south spectrum. Movements south to north or east to west are expected to be associated with a decline in efficiency. The effect on efficiency of north-south *and* east-west or south-north *and* west-east movements is more difficult to predict since the changes in the product market and organisational status appear to have opposing effects upon efficiency.

The organisations selected for study are the Post Office postal and telecommunications services, London Transport, the National Freight Corporation (later Consortium), British Airways, the Royal Mint, Her Majesty's Stationery Office, Rolls Royce, the Royal Ordnance Factories and British Aerospace. This sample includes all the relevant movements within the public sector and between the public and private sectors as set out in Figure 1. British Airways was not privatised until January 1987 but is included to test for "anticipation effects". Its privatisation was announced by government as early as 1980 though delayed by a recession in air transport and legal difficulties following the collapse of Laker Airways. Nevertheless we would expect to see changes in managerial behaviour reflected in changes in productivity in the run-up to privatisation. Casual observation suggests that privatisation in the UK has been preceded by important reorganisations aimed at making the firms involved more commercially orientated.

(Table 1 around here)

out in Table 1 where there is also a brief comment on the nature of the product market. In most cases, the change in status was not associated with any significant change in product market competition. Thus any improvement or deterioration in performance appears not to be related to a north-south or south-north movement and can therefore be attributed to the change in organisational status. There are three major exceptions. In the 1980's London Transport faced increased competition from other bus companies and modes of transport, losing some of its monopoly of public transport in London. Similarly, following the HMSO's establishment as a trading fund in 1980, government procurement of stationery was opened up to more private competition. The third case involves British Aerospace. On nationalisation in 1977 British Aerospace was created by the merger of three airframe manufacturers, namely, Hawker Siddeley Ltd, the British Aircraft Corporation (Holdings) Ltd and Scottish Aviation Ltd. In these three cases efficiency changes could reflect both the effect of a change in organisational status and an alteration in the market environment.

3. The performance measures and empirical results

Testing hypotheses relating organisational status to performance is not without its problems. Allowance has to be made for what would have happened without the change; for the possibility that a transfer of ownership leads to the pursuit of different objectives; for anticipation effects whereby performance might improve prior to a status change; and for the possibility of substantial lags in improved performance following the change. Indeed the

possibility of both anticipation and lag effects raises doubts about relying on the publicly-announced date of the status change. Finally, and ideally, a model is required which holds constant all other relevant variables, so isolating any contribution of status change to improved performance. For example, in the 1970s, UK labour productivity grew slowly, whereas between 1979 and 1987 it rose substantially. Changes in performance during these years by firms in our sample may merely reflect national trends. In this paper the counter-factual is represented by trends in labour productivity and total factor productivity for the UK economy, public corporations and manufacturing.

So far the term "efficiency" has been used but not defined. This study is concerned with "production" efficiency as reflected by changes in labour and total factor productivity before and after the relevant organisational changes. Both productivity measures have been widely used as indicators of economic performance. For example, the National Economic Development Office (1976), Pryke (1981) and Molyneux and Thompson (1987) have used both measures to determine how efficiently some of the UK's nationalised industries have performed throughout the last three decades. It is, however, recognised that there are further performance measures such as profitability, various financial ratios, market shares, technical progress and consumer satisfaction (e.g. number of complaints: Smith and Mayston, 1987).

The rationale behind an examination of the behaviour of an organisation's productivity is to determine the relationship between changes in the volume of outputs and changes in the volume of inputs

(holding constant the quality of both inputs and outputs). If the volume of output changes more rapidly than the volume of inputs then the organisation's productivity can be said to have changed.

The broadest measure of productivity change is total factor productivity (TFP) growth which, under certain conditions¹ and for small changes, is defined as the rate of growth of output minus a weighted average of input growth rates, where the weights are the share of each input in total cost (Millward and Parker, 1983, pp. 225-9; Muellbauer, 1986). Labour productivity, of course, is easier to calculate than TFP, demanding input data on only one factor of production. For the same reason, however, changes in labour productivity can present a very misleading picture of an organisation's productivity growth. For example, a firm could be shedding labour very quickly while producing the same level of output with much increased levels of other inputs. The narrower (labour productivity) measure would thus show an increase in productivity whereas the broader measure might show no improvement in TFP.

Changes in productivity are usually reported as trends, with annual data being averaged over a five- or ten-year period. There are several reasons for this. First, when long time periods are considered, space considerations often demand the reporting of results in a concise form. Second, and perhaps more importantly, the definition of TFP growth given above assumes that the

1. In particular, that there are constant returns to scale and that the firm faces competitive factor and product markets. Also, that the firm is in equilibrium with factors of production being paid the value of their marginal products. Consequently factor payments exhaust the

organisation's employment of inputs is in equilibrium. If, however, there are costs of adjusting input levels (see Gould, 1968 and Burgess, 1988, for example), occasions will arise when the organisation has a non-optimal employment of factor inputs. Consequently, a year-by-year measure of productivity growth will be influenced by the effects of short-run changes in the utilisation of factors of production. However, by averaging productivity growth over a number of years the influence of such short-run changes in the utilisation of various factors can be much reduced. Third, in some studies, such as this one, much of the data behind the reported productivity measures is culled from the organisation's own annual accounts. Changes in accounting and reporting practice frequently mean that consistent accounts are simply not available. Although the data were adjusted wherever possible for significant changes in reporting practice, the implication is that while the significance of year-to-year productivity changes cannot be vouchsafed, broad trends over, say, a four or five year period, are that much more reliable.

Finally, when interpreting our results we need to remember that changes in TFP might reflect changes in the technology available to an organisation or changes in the efficiency with which inputs are combined in an organisation. Our argument is that status affects an organisation's efficiency and thus when comparing rates of TFP growth there is an implicit assumption that no new technology became available at about the same time as the change in organisational status. To reduce the possibility that the availability of new technologies might contaminate our results, we focused on average

annual growth rates over a relatively short period of four years, but a period long enough to overcome the problems outlined associated with year-on-year changes in productivity.

In the results reported below labour productivity (LP) is defined as:-

$$LP = \frac{\text{weighted index of physical quantities of output}}{\text{volume of labour input}}$$

where the volume of labour input was taken to be the organisation's average number of employees throughout the year. There was insufficient information on average hours worked to provide a more satisfactory denominator. TFP is defined as:-

$$TFP = \frac{\text{weighted index of physical quantities of output}}{\text{(total expenditure on inputs/weighted index of input prices)}}$$

A formal statement of the model can be found in Appendix 1. When a volume of output figure was not readily available the value of output was deflated using an appropriate price index. Usually more than one price index was tried as a deflator; in this way we were able to examine the sensitivity of our results to the precise price deflator used. For all organisations, output and expenditure data were extracted from annual reports and accounts and in certain cases internal working papers. Input and output price indices were derived from a variety of sources which are listed in Appendix 2.

Table 2 reports the average annual growth in labour and total factor productivity for the four years before and after each organisation's status change.² British Aerospace and London Transport provide two tests of our central hypothesis because both firms underwent two changes in organisational status. The results are presented for groups of trading funds, public corporations and ownership changes.

(Table 2 Here)

For HMSO two sets of figures are reported for each productivity measure reflecting the use of different price deflators for the value of output series. Irrespective of which deflator is used, however, both results show an increase in labour productivity growth following the movement from government department to trading fund status. Such a result is in accordance with our model's predictions. However, the TFP growth results present a different picture. In particular, whether TFP growth improves or deteriorates after the organisation's status change depends upon the precise price index used to deflate the value of output series. Using the retail price index for all items excluding food yields an improvement in productivity performance in the sense that the decline in TFP slows down. However, using an appropriately weighted output price index combining paper, printing

2. In all cases the dates refer to accounting year ends. For example, for the HMSO 1977-80 refers to the accounting years year ending 31 March 1977 to 31 March 1980.

and publishing with office machinery results in a very slight deterioration of performance. Obviously this latter result is likely to be the more accurate due to the use of a more appropriate price deflator for the value of output series. However, the increased rate of decline in productivity growth is very small (just 0.1 per cent per annum). For this reason, and the fact that the data behind the result are likely to contain some measurement error, we would not want to attach too much significance to this result. Both figures suggest, however, that the gain in labour productivity following the status change was not mirrored in an improvement in TFP. This is also the case if later periods are compared to allow for a time lag before the status change affected performance. Between 1982 and 1986, for example, labour productivity rose by an impressive 12.0 per cent per annum, and TFP growth was zero rather than negative.

Consider next the results for Royal Mint which also became a trading fund. Here there is no ambiguity. As our model predicts, the average annual growth in both labour productivity and TFP increased substantially following this organisation's change of status. For the Royal Ordnance Factories, which became a trading fund in July 1974, three sets of results are reported for both productivity measures, again reflecting the use of different price indices to deflate the value of output series. Unfortunately, there is an absence of an appropriate price series for munitions. In the event, the precise price index used is immaterial as for both labour productivity and TFP growth, all three output series move in the same direction following the organisation's change of status. Contrary to our hypothesis labour productivity growth falls following the change of status from

about 12.2 per cent to around 2.5 per cent per annum averaging the three results. However, TFP growth increases from about 1.6 per cent to about 5.5 per cent per annum. This confirms an earlier observation that changes in labour productivity may not be reflected in changes in TFP. Changes in labour productivity are part of changes in TFP but changes in the productivity of other factors may dominate changes in labour productivity.

In the case of the Post Office postal and telecommunications businesses, it was expected that productivity would rise with public corporation status. In fact, while labour productivity did improve, the performance of TFP deteriorated, implying an inefficient use of resources.

For London Transport two measures of the volume of output were used. First, the number of passenger miles paid for travel by road and rail. However, this measure of output could fall, due to an exceptionally cold winter for example, although exactly the same services were being offered by London Transport. As an alternative measure of output we used the number of passenger place miles available for travel by road and rail.

For both measures of output annual labour productivity growth falls following London Transport's status change in January 1970 from about 2.5 per cent in the four years prior to the status change to between 1.7 and 2.4 per cent in the four years after the status change. The movement in TFP growth shows a sharper deterioration. Using the narrower measure of output, the number of passenger miles paid for travel by road and rail, the average annual growth in TFP

decreased from 1.6 per cent to -1.9 per cent. Similarly, using the broader, and perhaps more appropriate measure of output, TFP growth fell from 1.5 per cent to -2.7 per cent per annum.

The productivity growth results following London Transport's change of ownership in June 1984 were also qualitatively unambiguous, no matter which measure of output or productivity was used. Taking an average, labour productivity growth jumped from 0.8 per cent per annum in the four years prior to the status change to 11.6 per cent per annum in the four years after. TFP growth also increased but by slightly less; from a negative growth of around -2.1 to -0.1 per cent to between 3.2 and a very respectable 7.3 per cent per annum. Advancing the date of the status change one year to reflect any 'anticipation' effects, produced even more impressive growth figures of -4.3 per cent to 13.0 per cent in labour productivity and from -6.5 per cent to 8.9 per cent in TFP. Thus, the two changes for London Transport involving movements between government department and public corporation status produced results consistent with our central hypothesis.

For Rolls-Royce three sets of figures for both labour productivity and TFP growth are reported, each reflecting the use of a different price index with which to deflate the value of output series. The three price indices used were (i) a total (labour and materials) input price index for aero-engines and aero-engine parts - on the grounds that price might be set as some mark-up over cost; (ii) an output price index for the appropriate SIC group, mechanical engineering; and (iii) the retail price index for all items excluding food. No matter which price index was

used the qualitative result was the same for both productivity growth measures. Taking an average of the three figures the annual labour productivity growth increased from around -6.0 per cent to about 14.1 per cent; while the change in TFP growth was qualitatively similar but of a smaller order of magnitude from about -1.6 per cent to 5.2 per cent per annum. These results contradict our hypothesis (an east-west movement in Figure 1). The state take-over in 1971 was associated with higher productivity, although this improvement might reflect the "shock effect" of the company's financial collapse.

The results for British Aerospace's first change of status in 1977 also support our hypothesis. Again there are three figures for both labour productivity and TFP growth, reflecting the use of different indices to deflate the firm's value of output. Again the results indicate that the precise index used is immaterial. Labour productivity growth fell following nationalisation from around 5 to 9 per cent to around 0 to 2.4 per cent per annum depending upon the price deflator used. Similarly, averaging the results, TFP growth declined from about 2.2 per cent to about 0.2 per cent per annum. Using the same price indices the results for British Aerospace's second change of status in 1981 again supported our hypothesis. Following privatisation, and averaging, labour productivity growth jumped to about 7.2 per cent per annum; while TFP growth increased to 2.8 per annum.

The results for the National Freight Consortium appear to contradict our central hypothesis. Whereas we would expect

productivity to have risen on privatisation - especially as the form of privatisation implies a 'long-move' on our west-east spectrum - both labour and total factor productivity growth decreased after 1981. In this case, though, the results are especially sensitive to the year chosen as the date of the status change.

Although privatised in February 1982, denationalisation was heralded in the Conservative's 1979 Manifesto and the necessary legislation received the Royal Assent on 30 June 1980. Taking 1980 as the year of status change to reflect 'anticipation effects', as management prepared for privatisation, the growth in labour productivity in the four years before and after this date is as our central hypothesis predicts (the figures are in parentheses in Table 2). Labour productivity, depending upon which price deflator is used, grew from between 0.5 and 2.1 per cent per annum 1977-80 to between 7.1 per cent and 9.0 per cent per annum between 1980 and 1984. Although TFP rose in the same period, the results for this measure are less clear cut (figures in parentheses in Table 2) with the growth in TFP rising impressively when output is deflated by a transport and vehicles prices deflator but not when output is deflated by the non-food RPI. The transport and vehicles deflator is probably more representative of price movements in road haulage. But in the absence of a better output series the precise movement in TFP in this period must remain unclear.

In so far as public ownership is associated with over-manning, we would expect to see labour productivity increase more spectacularly than TFP after the announcement of privatisation and this is borne out

occurred in the mid-1980s, after privatisation. Between the start of 1983 and the end of 1986 labour productivity in the NFC rose by between 6.5 per cent and 8.2 per cent and TFP by between 1.8 per cent and 3.4 per cent per annum, depending upon the price deflator used, with output based on the transport and vehicles price deflator still giving the higher results.

For British Airways figures for both labour productivity and TFP growth are reported reflecting two different ways of measuring the airline's volume of output. The first result uses available tonne kilometres (ATK). However, a number of factors might influence the cost of providing a given number of tonne kilometres. In particular, the longer the flight stage length and the larger the aircraft size the lower the cost per tonne kilometre. Also, an increase in passenger load will not increase the cost per tonne kilometre proportionately. Thus a second measure of British Airways' output was used to take account of these variables. Lacking data on the average size of the aircraft in the British Airways' fleet, we used as a measure of output $ATK^\alpha AS^\beta PLF^\gamma$, where AS is the average sector flown and PLF is the passenger load factor. The parameters α , β and γ take the values of 1.0, -0.2 and 0.4 respectively, reflecting the quantitative effect each variable is believed to have on airline unit costs (for a justification of these weightings see Forsyth, Hill and Trengove, 1986).

Irrespective of which measure of output or productivity is used, the results for British Airways support our hypothesis of an anticipation effect. The average annual growth in labour productivity increased from about 6.4 per cent to around 7.9 per cent following

the announcement that the organisation was to be privatised.

Similarly the average growth in TFP increased from about 5.5 per cent to about 6.5 per cent per annum.

4. Controlling for other factors

A potential problem facing our time series study is controlling for factors other than the status change which might have affected performance. Competition in the product market is a possible factor. But as already mentioned, except for British Aerospace in 1977 and London Transport and the HMSO in the 1980s, there appear to have been no significant changes in the intensity of competition facing our organisations around the times of the status changes. It is possible, however, that our results reflect more general trends in UK productivity. That productivity performance has improved since the early 1980s is well chronicled (eg Muellbauer, 1986, McWilliams, 1989). Moreover, macroeconomic policy can impact upon productivity levels. A deflationary policy tends to reduce productivity growth initially due to labour hoarding and a time lag in adjusting capital stock.

To reflect national productivity movements the labour productivity and TFP figures for each organisation were compared with the corresponding estimates for the UK economy, public corporations and, in the case of manufacturing businesses, UK manufacturing. The results are presented in Table 3. The figures represent the average annual percentage difference in the growth rate of each of our organisations and the appropriate national productivity indicator in the periods before and after the status change. For example, a

positive figure indicates that the organisation's productivity growth exceeded the national average.

(Table 3 Here)

In the case of the HMSO, the rise in labour productivity after 1980 appears to reflect a general improvement in labour productivity nationally in the period. Indeed, compared with productivity in UK manufacturing and public corporations, the HMSO's performance was especially disappointing between 1981 and 1984, though it improved between 1982 and 1985. In terms of TFP a disappointing performance is also confirmed. The decline in TFP contrasts vividly with improved performance nationally. In contrast, after allowing for national productivity movements, the Royal Mint showed a dramatic improvement in both measures of productivity following its status change.

Turning to the Royal Ordnance Factories where earlier it was discovered that labour productivity deteriorated but TFP improved with the change to trading fund status, comparison with national data suggests a more complex result. The decline in the rate of growth in ROF labour productivity after 1974 appears to reflect a worsening UK productivity trend. The decline is less evident when compared with trends in average productivity in the whole economy, public corporations and manufacturing. Similarly, although TFP growth in the Royal Ordnance Factories was stronger after 1974 than in the immediately preceding years, in relation to TFP growth in the whole economy and public corporations performance worsened. Only when compared with the very slow growth in UK manufacturing TFP in these .pa years does the performance of the Royal Ordnance Factories appear

to have improved.

Figures for the Post Office postal and telecommunications businesses present a confusing picture. In the postal service comparative labour productivity improved after 1969 as our central hypothesis predicts, though it still lagged behind growth rates for the whole economy and for public corporations. Comparing TFP growth rates, the postal service improved its performance slightly in relation to public corporations after 1969 but suffered a worsening of performance relative to TFP growth in the whole economy. In telecommunications a higher comparative labour productivity growth rate was matched by higher TFP growth in relation to other public corporations. However, in relation to TFP growth in the whole economy the record of Post Office telecommunications was disappointing. The growth rate almost matched that of the economy generally in the four years before 1969 but lagged behind the national growth rate by an average of 1.0 per cent per annum in the four years after 1969.

The comparative TFP results for London Transport are also in accordance with our central hypothesis. Compared with the national indices, performance deteriorated further from 1970 when the GLC became responsible for overseeing the corporation, and improved sharply after 1984 when greater operating independence was achieved. The comparative labour productivity figures suggest some improvement after 1970, though only by a slight amount. A sharply improved performance is confirmed, however, for the period after 1984.

The results for Rolls Royce confirm that labour productivity and TFP improved following the status change after allowing for national productivity movements. However, the good performance after nationalisation, particularly for TFP, did not last. From 1975 to 1978 both labour productivity and TFP fell in Rolls Royce while national productivity continued to rise slowly. The results for British Airways and the National Freight Corporation are also in accordance with our earlier findings - performance improved after the announcement of privatisation.

The earlier British Aerospace results are mixed. The slight improvement in TFP performance in relation to public corporations in general and UK manufacturing during the period of nationalisation is a feature of the very poor TFP record of public corporations and manufacturing industry in these years. Similarly, the sharp recovery in UK manufacturing productivity in the early 1980s accounts for the deterioration in relative TFP performance after 1981. Basing the comparison on comparative labour productivity growth, however, nationalisation and privatisation had the predicted consequences.

5. Conclusion

Table 4 summarises the results in terms of our initial hypothesis. In most cases the central hypothesis that a west to east movement leads to an improvement in performance was supported by both the labour productivity and total factor productivity results. In the cases of the HMSO, the Royal Ordnance Factories and the Post Office postal and telecommunications businesses, however, the two measures produced different conclusions. The transfer of the Royal

Ordnance Factories from control by a government department to a trading fund appears, contrary to our expectations, to have led to a slight deterioration in the growth of labour productivity alongside some improvement in the total factor productivity trend. Other than the lack of an appropriate output series, there is no obvious explanation for this and it is noticeable that productivity performance in relation to the aggregate productivity indices was mixed. In the case of the HMSO the results depend on whether the date of status change is taken as 1980 or 1982. Changing the date allows for a delay between becoming a trading fund and performance improving. The idea of time lags, like improvements in performance in the run-up to a status change, seems plausible and perhaps likely.

Turning to the Post Office postal and telecommunications businesses, labour productivity appears to have improved but TFP appears to have deteriorated with the coming of public corporation status. The result was usually supported when productivity growth in the postal service was compared with productivity growth in the economy and in public corporations in general. In telecommunications the deterioration in TFP growth appears not to have been as large as in other public corporations but worsened compared with TFP growth in the whole economy. For London Transport relative labour productivity did not decline as expected when the service became accountable to the GLC. On the other hand, the TFP measure does suggest a deterioration in performance in accordance with our central hypothesis. In the case of the National Freight Corporation, the results broadly support the view that privatisation led to an improvement in productivity.

In terms of our schema, HMSO faced greater competition for orders within government from 1982, or a north-south movement in terms of Figure 1. Therefore at least part of the improvement in performance observed may be the consequence of a change in the product market rather than a change in organisational status. Similarly, London Transport faced more competition in the 1980s, associated with the Government's policy of liberalising public transport. However, given that the management of London Transport was briefed to reduce losses and act more commercially when accountability to the GLC ended, it is probable that the sharply improved performance we have identified was associated with the status change. Also, the nationalisation of British Aerospace caused an east-west and south-north movement which we predicted would produce a major deterioration in performance. This was broadly confirmed. Only when the company's TFP performance was contrasted with productivity changes in UK manufacturing was there some suggestion that our central hypothesis did not hold. This, however, reflects the large fluctuations in manufacturing productivity between 1976 and 1984 rather than improved performance under nationalisation and a deterioration in performance when privatised.

The only case where both productivity series did not confirm our central hypothesis was Rolls Royce. The state takeover in 1971 should, according to our thesis, have led to a poorer performance. In fact, both labour productivity and total factor productivity, which had been declining in the years immediately prior to 1971,

of this result. First, nationalisation can lead to greater efficiency, contrary to the arguments of public choice and property rights theorists. Second, reorganisation leads to improved performance (change is in itself reinvigorating). Or third, the state takeover resulted from financial failure and following the collapse new managerial methods were introduced. Although the first two possibilities cannot be entirely ruled-out, the third seems more attractive. In the light of our other results, it is difficult to accept the view that reorganisation per se is all that is required; while the first possibility would be more easy to sustain if the improved performance had lasted. In fact, both labour productivity and total factor productivity deteriorated significantly in Rolls Royce from the mid-1970s. Between 1975 and 1978, for example, TFP declined by -2.4 per cent per annum and labour productivity by -3.7 per cent. An initial spurt in productivity is, however, reconcilable with the view that the financial collapse acted as a short-term stimulus to reorganise and cut waste. By the mid-1970s nationalisation was having the effect on productivity which our central hypothesis forecasts.

Despite some inconsistencies in our results, a movement west to east in Figure 1 appears, on the basis of our sample, to lead to improved performance measured in terms of partial and total factor productivity. The sample is small, however, and more research is necessary covering different periods and organisations. Nevertheless, despite the limitations, our results generally support the UK Government's programmes for setting-up agencies to some degree at

industries. The results also have relevance to governments in other countries pursuing similar policies. It does seem that movements west to east in our schema, from government departmental control, to agencies, public corporations and the private sector can bring gains in efficiency. Improved performance, however, is not guaranteed.

APPENDIX 1

Calculation of total factor productivity

To investigate the effects of organisational status upon performance, total factor productivity growth was studied using a full equilibrium index model. Production was assumed to be characterised by a production function of the following form in which all factors of production were assumed to be in equilibrium:

$$Q_t = A_t f[K_t, L_t, M_t, E_t]$$

where Q is output, K is the stock of physical capital, L is the labour input, M is raw material and component inputs, E is energy and subscript t refers to the time period. A is a Hicks-neutral measure of technical change.

Assuming for simplicity a Cobb-Douglas production function of the form:

$$Q_t = A_t \cdot a \sum_{i=1}^4 N_{it}^{b_i}$$

where N_{1t} equals K_t , N_{2t} equals L_t , N_{3t} equals M_t , N_{4t} equals E_t and b_i equals the output elasticity of factor i . An index of TFP is defined as:

$$TFP_t = Q_t / a \sum_{i=1}^4 N_{it}^{b_i}$$

Computing time derivatives of the log of this equation produces

$$TFP'_t / TFP_t = Q'_t / Q_t - \sum_{i=1}^4 b_i (N'_{it} / N_{it})$$

where

$TFP'/TFP = d[\log TFP_t]/d_t$, $Q'/Q = d[\log Q_t]/d_t$ and $N'_i/N_i = d[\log N_{it}]/d_t$
 The TFP growth index is based upon two standard assumptions. First
 that the output elasticity of the i th input is equal to the share of the
 i th input in the total cost; and that there are constant returns to
 scale, or $\sum_{i=1}^4 b_i = 1$.

The first assumption relates to the first order conditions for factor
 market equilibrium. An alternative approach is to use a partial
 equilibrium model in which capital is assumed to be quasi-fixed (not in
 equilibrium: Diewart, 1981). Hazilla and Kopp (1987) have used both
 approaches to estimate industrial productivity and discovered that the
 corresponding estimates were usually the same (also see Lichtenberg and
 Siegel, 1987, p 655). The assumption of constant returns is important in
 so far as increasing or decreasing returns would increase the likelihood
 that the status change is perceived to have a statistically significant
 effect on the growth of TFP.

From the above and using the methodology employed by Griliches and
 Lichtenberg (1984) and Molyneaux and Thompson (1987), amongst others, we
 calculated a Tornqvist (1936) index to give a discreet approximation to

the continuous Divisia index of real input. Thus our formula for TFP growth became:

$$\begin{aligned} \text{TFP}'/\text{TFP} &= \ln(Q_t/Q_{t-1}) - \sum_{i=1}^4 [0.5(V_{it}+V_{i,t-1})] \ln(N_{it}/N_{i,t-1}) \\ \text{where } Q_t/Q_{t-1} &= Z_j [Q_{j,t}/Q_{j,t-1}]^{\frac{1}{2}(r_{jt}+r_{j,t-1})} \\ V_t/V_{t-1} &= Z_i [V_{it}/V_{i,t-1}]^{\frac{1}{2}(s_{it}+s_{i,t-1})} \\ r_{jt} &= P_{jt}Q_{jt} / \sum P_{jt}Q_{jt} = \text{revenue share of output } Q_j \\ &\quad \text{in total revenue during period } t \\ V_{it} &= \text{quantity of input } V_i \text{ produced in period } t, \text{ and} \\ s_{it} &= W_{it}V_{it} / \sum W_{it}V_{it} = \text{cost share of input } V_i \\ &\quad \text{in total cost during period } t. \end{aligned}$$

Changes in aggregate output and input between any two years were measured by using the prices in each year as the relevant weights. This minimises bias caused by changes in relative factor prices over the whole period studied (Kendrick, 1961). A composite input price index was computed for each year reflecting the input weightings and used to obtain the value of real inputs. The result is the real cost of producing output (Forsyth, Hill and Trengove, 1986 p. 65).

APPENDIX 2

This appendix reports on the data and the precise price indices used to deflate the value of output data (where volume of output data were not readily available) and to construct a weighted annual index of prices for each organisation.

Output in current fs is defined as the value of sales with adjustments for stocks and work in progress where relevant.

Labour input is wages and salaries, pensions and employers' national insurance contributions in current fs. No data were available on hours of work for our sample of organisations. Use of figures for national and industry level hours worked may not be appropriate. Nevertheless, in certain cases these figures were used as a cross-check on our results reported. The direction of change in TFP and the broad order of magnitude of TFP growth were unaffected.

Capital input was constructed using interest and depreciation charges which it is recognised may not accurately reflect economic amortisation of capital but was considered to be a broad approximation. Haid and Muller (1986) argue that: "In general, economic depreciation is approximated by using accounting rates of depreciation." This, however, is controversial. With economic amortisation, y , a function of our approximation, x , and s an error term, we have assumed that $y = [x, s]$ with $s \neq F[DV]$ where DV is the status change. There is no reason to suppose that this should not be so.

Other inputs were based upon the categories of costs in current values in accounts. In all cases appropriate input price deflators were used.

Unit labour input costs were calculated as total labour costs divided by the average number of individuals employed by the organisation throughout the year. The gross domestic fixed capital formation deflator for manufacturing industry was used as an index of capital input costs. The retail price index for all items excluding food was used to deflate those (other) costs which were not specifically identified in the accounts, or for which a more appropriate deflator could not be found, or which comprised less than 1 per cent of total expenditure.

Where an organisation's annual accounts referred to a year ending 31 March all price indices were appropriately adjusted by linear interpolation.

All price indices were extracted from various issues of *British Business*, *Digest of United Kingdom Energy Statistics*, *Monthly Digest of Statistics* and *Transport Statistics Great Britain*. Output series are from annual accounts and CSO data.

Her Majesty's Stationery Office (HMSO)

Output index: value of output deflated by (i) the retail price index for all items excluding food and (ii) an appropriately weighted output price index combining paper, printing and publishing with office machinery, where the weights reflected the share of office machinery in the total value of HMSO's sales in 1981-82.

Input price index: unit labour costs, an input price index for materials and fuel purchased by paper, printing and publishing plus other costs weighted by the annual share of each input in total expenditure.

Royal Mint

Output index: number of coins minted.

Input price index: unit labour costs, an output price index for metal manufacturing (to deflate raw material costs), an output price index for mechanical engineering to deflate semi-processed material costs, capital input costs, electricity costs per kW therm (to deflate fuel costs) plus other costs weighted by the annual share of each input in total expenditure.

Rolls-Royce

Output index: value of output deflated by three alternative price indices: (i) a total input (materials and labour) price index for aero-engines and aero-engine parts; (ii) an output price index for mechanical engineering and (iii) the retail price index for all items excluding food.

Input price index: unit labour costs, capital input costs plus an input price index for materials purchased by aero-engines and aero-engine parts weighted by the annual share of each input in total expenditure.

British Airways

Output index: either (i) available tonne kilometres (ATK) which is defined as the sum over all of the airline's flight operations of the payload capacity of the aircraft multiplied by the distance flown or (ii) the more complicated but perhaps more appropriate $ATK^\alpha AS^\beta PLF^\gamma$ where AS is the average sector flown and PLF is the passenger load factor. The parameters α , β and γ take the values of 1.0, -0.2 and 0.4 respectively (see Forsyth *et al*, *op cit* for a discussion of this approach to this measurement of an airline's output).

Input index: unit labour costs, aviation jet fuel index (to deflate fuel costs), capital input costs plus other costs weighted by the annual share of each input in total expenditure.

Royal Ordnance Factories

Output index: value of output deflated by either (i) the retail price index for all items excluding food, (ii) an output price index for mechanical engineering or (iii) an output price index for metal goods.

Input price index: unit labour costs, an output price index for metal manufacturing (to deflate material input costs), capital input costs plus other costs weighted by the annual share of each input in total expenditure.

British Aerospace

Output index: value of output deflated by either (i) the retail price index for all items excluding food, (ii) an output price index for mechanical engineering or (iii) a total (materials and labour) cost index for inputs to the aerospace industry (on the grounds that much of British Aerospace's public sector work will be on a cost-plus basis).

Input price index: unit labour costs, a material and fuel input cost index for the aerospace industry, capital costs, plus other costs weighted by the annual share of each input in total expenditure.

London Transport

Output index: either (i) the number of passenger miles paid for travel by road and rail or (ii) the number of place miles available for travel by road and rail.

Input price index: unit labour costs, capital costs, fuel and power costs as measured by an index combining, with equal weights, indices measuring the cost per kW therm of electricity and the producer price of derv, engineering materials costs measured by the output price index for mechanical engineering plus other costs weighted by the annual share of each input in total expenditure.

National Freight Corporation

Output index: value of output, measured as turnover, deflated by two alternative price indices: either (i) the retail price index for all items excluding food or (ii) the retail price index for transport and vehicles.

Input price index: unit labour costs, capital input costs plus other costs weighted by the annual share of each input in total expenditure.

Post Office Postal and Telecommunications

Output index: additional income due to business expansion net of price changes divided by previous year's output.

Input index: current expenditure less additional expenditure due to pay and price levels divided by previous year's expenditure.

Total Factor Productivity whole economy

Output: index of GDP at constant factor cost; output based measure (1980=100)

Input of labour: workforce employed in the economy at mid-year. Weighting was based on the share of total income going to labour (Lw), with the weight on capital as 1-Lw. The capital input therefore reflects all non-labour inputs in value added (for a defence of this method, Devine, et al, 1985, p.307).

Input of capital: gross capital stock at replacement cost and constant prices at mid-year (1980=100).

Total Factor Productivity UK manufacturing

Output: index of manufacturing in GDP at market factor cost; output based measure (1980=100).

Input of labour: employees in manufacturing as at mid-year weighted by the share income for labour in manufacturing income (Lmw); with the weight on capital as 1-Lmw. The capital input therefore reflects all non-labour inputs in value added.

Input of capital: gross capital stock in manufacturing at replacement cost and constant prices at mid-year (1980=100).

Total Factor Productivity public corporations

Output: total sales of public corporations at constant prices (1980=100).

Input of labour: numbers employed in public corporations weighted by the share of wages in total income of public corporations (L_{pw}).

Raw materials and other non-labour and non capital inputs: purchases of public corporations deflated by non-food RPI and weighted by purchases in total income of public corporations (L_{pp}).

Capital input: net capital stock at replacement cost and constant prices (1980=100). Weighting for capital is $1-(L_{pw}+L_{pp})$.

Comment on possible error

Measurement error could arise because the price deflators used for output and inputs do not accurately reflect price movements. In constructing our TFP indices, however, there is no reason to believe that any measurement error is correlated with the dummy variable so biasing our results.

Moreover, where a reliable "own price" deflator was not available a number of deflators were tried and the results compared. Adopting this procedure also helps to identify cases where the "own" price deflator reflects not only price inflation but changes in the quality of output. There is a danger of understating productivity growth if part of any price rise removed by deflating relates to quality changes.

It is assumed that there are constant returns to scale and that the firm faces competitive factor and product markets. Also, that the firm is in equilibrium with factors of production being paid the value of their marginal products. Consequently, factor payments exhaust the firm's total revenue.

In all cases the dates refer to accounting year ends. For example, for the HMSO '1977-80' refers to the accounting years 'year ending 31 March 1977 to 31 March 1980'.

Figure 1

North



X

Monopoly

PRODUCT MARKET

Perfect Competition

Y

A

Government department

Agencies

Public corporation

Hybrid

PLC

Owner manager

B

CAPITAL MARKET

Table 1: Organisational Status Changes

Type of change	Organisation	Date	Change in product market	Prediction from central hypothesis of change in productivity
1. Government department to trading fund	Royal Ordnance Factories	July 1974	No	Improvement
	Royal Mint	April 1975	No	Improvement
	HMSO	April 1980	Yes	Improvement
2. Government department to public corporation	Post Office Postal	April 1969	No	Improvement
	Post Office Telecommunications	April 1969	No	Improvement
3. Public corporation to (local) government department ¹	London Transport	Jan 1970	No	Deterioration
4. Local government department to public corporation	London Transport	June 1984	Yes	Improvement
5. Change of ownership:-				
(a) Public limited company to public corporation ²	Rolls Royce	Feb 1971	No	Deterioration
	British Aerospace	April 1977	Yes	Deterioration
(b) Public corporation to public limited company	British Aerospace	Feb 1981 ³	No	Improvement
	National Freight	Feb 1982 ⁴	No	Improvement
(c) Anticipation effects: public corporation to public limited company	British Airways	1980-1987 ⁵	No	Improvement

Notes for Table 1

- (1) London Transport strictly remained a public corporation throughout. From 1970 to 1985, however, it was responsible to the Greater London Council and was subjected to more frequent and extensive political interference, especially in pricing policy. Therefore for our purposes the change in status in 1971 is treated as if it were a movement from public corporation to government department status.
- (2) Rolls Royce was not nationalised in a formal sense; its shares fell into government ownership following financial collapse. For our purposes, however, this transfer is treated as a movement from PLC to public corporation status.
- (3) In February 1981 51.6% of the shares in British Aerospace were sold by the government. The remainder were sold in May 1985. At the time of the first sale the Government undertook not to interfere in the running of the company. 1981 can therefore be treated as the date of privatisation despite the Government's continued shareholding.
- (4) National Freight was a manager and worker buy-out of a public corporation supported by the banks. It therefore represents the "longest" movement west to east of any firm in our sample. We would therefore anticipate major efficiency gains.
- (5) British Airways was not privatised until January 1987 but is included to test for "anticipation effects" since its privatisation was announced by government as early as 1980 but delayed by a recession in air transport and legal difficulties following the collapse of Laker Airways.

Table 2: Average Annual Growth in Productivity

Organisation	Year of status change	Notes	Average annual growth in productivity (%)			
			Before change LP	Before change TFP	After change LP	After change TFP
1. <u>Trading funds</u>						
HMSO	1980	1	0.4	-1.9	2.6	-1.5
		2	1.7	-0.6	3.2	-0.7
Royal Mint	1975	3	-5.6	-4.5	8.8	6.1
Royal Ordnance Factories	1974	1	13.6	2.9	4.4	7.5
		4	11.8	1.3	1.6	4.6
		5	11.1	0.5	1.6	4.4
2. <u>Public corporations</u>						
Post Office Postal	1969	6	-1.1	-1.3	1.3	-2.3
Post Office Telecommunications	1969	6	5.0	2.7	11.3	1.5
London Transport	1970	7	2.5	1.6	2.4	-1.9
		8	2.4	1.5	1.7	-2.7
London Transport	1984	7	0.0	-2.1	14.0	7.3
		8	1.6	-0.1	9.2	3.2
3. <u>Ownership changes</u>						
Rolls Royce	1971	1	-5.9	-1.5	16.5	7.5
		9	-7.4	-3.0	12.4	3.3
		4	-4.9	-0.4	13.6	4.7
British Aerospace	1977	1	9.0	4.4	1.6	0.6
		4	6.3	1.8	2.4	1.3
		10	4.8	0.4	0.0	-1.2
British Aerospace	1981	1	1.6	0.6	6.9	2.5
		4	2.4	1.3	7.8	3.3
		10	0.0	-1.2	7.0	2.5
National Freight Consortium	1982	1	6.1	2.8	2.4	-0.9
			(2.1)	(2.8)	(7.1)	(1.3)
		11	5.1	2.4	4.0	0.7
		(0.5)	(1.2)	(9.0)	(3.1)	
British Airways	1980	12	6.2	5.6	7.8	6.5
		13	6.5	5.4	8.0	6.4

Notes for Table 2

1. Using the retail price index for all items excluding food to deflate the value of output.
2. Using an appropriately weighted output price index combining paper, printing and publishing with office machinery.
3. Output is number of coins minted.
4. Using an output price index for mechanical engineering to deflate the value of output.
5. Using an output price index for metal goods to deflate the value of output.
6. Using Post Office figures of additional income due to business expansion net of price changes.
7. Using passenger miles paid for travel by road and rail as the volume of output.
8. Using passenger place miles available for travel by road and rail as the volume of output.
9. Using a total input price index for aero-engines and aero-engine parts to deflate the value of output.
10. Using a total cost index for inputs into the aerospace industry to deflate the value of output.
11. Using the retail price index for transport and vehicles to deflate the value of output as measured by turnover.
12. Using available tonne kilometres as the volume of output.
13. Using an augmented measure of available tonne kilometres (see text for details) as the volume of output.

Table 3: Controlling for National Productivity Changes

Organisation	Whole Economy		Public Corporations		UK Manufacturing	
	LP	TFP	LP	TFP	LP	TFP
<u>Trading funds</u>						
HMSO						
1977-80	0.5	-2.4	-1.3	-0.8	1.1	2.5
1981-84	0.2	-5.0	-3.3	-1.0	-2.8	-9.4
1982-85	7.1	-3.5	3.8	-3.2	4.1	-7.7
Royal Mint						
1972-75	-6.3	-3.6	-8.5	-6.9	-8.1	-7.0
1976-79	6.2	1.7	2.3	4.2	6.6	5.7
Royal Ordnance Factories						
1971-74	9.6	2.5	8.9	1.8	7.6	-1.2
1975-78	6.3	1.2	3.4	1.3	6.6	4.5
<u>Public corporations</u>						
Post Office Postal						
1966-69	-4.0	-4.4	-8.1	-5.6	n.a	n.a
1970-73	-1.5	-4.8	-0.4	-3.6		
Post Office Telecommunications						
1966-69	2.2	-0.4	-2.0	-1.6	n.a	n.a
1970-73	8.6	-1.0	9.7	0.2		
London Transport						
1966-69	-0.6	-1.5	-3.8	-2.7	n.a	n.a
1970-73	-0.1	-4.4	-1.3	-3.2		
1980-83	-0.5	-4.9	-5.7	-3.8		
1984-87	7.2	4.8	*	*		

continued over

Ownership changes

Rolls Royce							
1967-70	-10.4	-5.6	-13.6	-6.9	-11.1	-6.0	
1971-74	-4.8	2.5	9.9	1.8	-4.5	-1.2	
1975-78	-4.8	-5.9	-7.9	-5.8	-4.5	-2.6	
British Aerospace							
1973-76	4.0	0.1	-0.9	-3.2	2.4	-2.0	
1977-80	-1.2	-3.0	-4.0	-1.3	0.1	1.9	
1981-84	4.0	-1.8	0.5	2.2	0.9	-6.2	
National Freight Consortium							
1977-80	-0.7	-0.6	-3.5	1.0	n.a	n.a	
1980-83	5.0	0.3	-0.2	1.4			
1983-86	5.8	0.4	0.3 ²	1.2			
British Airways							
1978-79	3.7	1.0	-0.3	3.5	n.a	n.a	
1980-83	5.7	3.6	0.5	4.7			
1981-84	5.3	1.1	1.8	5.1			

Notes for Table 3

- * Privatisation distorts figures in this period, therefore results not reported.
- 1. Figures based upon output deflated by each organisation's nearest own price deflator or a physical output series where available.
- 2. 1983-85 only.
- 3. Figures show difference in percentage points between an organisation's average annual productivity growth and the corresponding national average figure (Organisation - UK). LP = average annual growth in labour productivity (%); TFP = average annual growth in total factor productivity (%).

Table 4: Summary of results

Organisation	Prediction of central hypothesis	Results			
		Labour productivity	Total factor productivity	Labour productivity compared with national trends	Total Factor productivity compared with national trends
HMSO	Improved performance	Confirmed	Mixed result	Mixed result	Not confirmed
Royal Mint	Improved performance	Confirmed	Confirmed	Confirmed	Confirmed
Royal Ordnance Factories	Improved performance	Not Confirmed	Confirmed	Not confirmed	Mixed result
Post Office Postal	Improved performance	Confirmed	Not confirmed	Confirmed	Mixed result
Post Office Telecommunications	Improved performance	Confirmed	Not confirmed	Confirmed	Mixed result
London Transport (local government control)	Deterioration in performance	Confirmed	Confirmed	Not confirmed	Confirmed
London Transport (public corporation)	Improved performance	Confirmed	Confirmed	Confirmed	Confirmed
Rolls Royce	Deterioration in performance	Not confirmed	Not confirmed	Not confirmed	Not confirmed*
British Aerospace (nationalisation)	Deterioration in performance	Confirmed	Confirmed	Confirmed	Mixed result
British Aerospace (privatisation)	Improved performance	Confirmed	Confirmed	Confirmed	Mixed result
National Freight	Improved performance	Confirmed	Mixed result	Confirmed	Confirmed
British Airways	Improved performance	Confirmed	Confirmed	Confirmed	Confirmed

* Comments refer to four years after the status change.