

A survey of the liberalisation of public enterprises in the UK since 1979

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Section 1: Introduction

In 1979 public enterprises in the UK accounted for 8% of employment, 10% of output and 16% of total gross domestic fixed capital formation¹. By 1992 the comparable figures were 3% of employment, 3% of output and 5% of gross domestic fixed capital formation.² During the Conservative administrations of Margaret Thatcher (1979-90) and John Major (1990-97) large scale privatisations of many of these enterprises took place. By 1998 only a few public enterprises remained, most notably the Post Office, London Underground and BNFL - the nuclear fuels and reprocessing company. The Post Office, London Underground and BNFL have each been the subject of proposals for privatisation³. While all of the major privatisations of telecoms, gas, water, electricity and railways were opposed by the Labour opposition at the time, the incoming Labour government of Tony Blair has no plans to reverse these privatisations and indeed has continued with feasibility studies of privatisation of remaining state-owned enterprises.

The government policy of enterprise privatisation is more properly described as liberalisation - the introduction of market incentives into industries where state ownership and/or legislation had limited private ownership and new entry. Liberalisation often consists of the interrelated policies of ownership transfer (conventionally defined privatisation), structural change to the industries concerned and the introduction of statutory regulatory bodies to oversee the behaviour of incumbent firms. Coupled with policies of liberalisation towards public enterprises the government undertook

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¹ Source: CSO (1987) UK National Accounts 1987 Edition.

² Source: CSO (1993) UK National Accounts 1993 Edition. This is the last year for which figures are comparable.

³ Stephen, P. and Rudd, R., 'Confidence grows of 51% Royal Mail sale', *Financial Times*, 19 September 1994, p.8; *Department of Environment, Transport and the Regions, Press Notice 213/Transport* 20 March 1998, 'John Prescott

the mass sale of council houses, the deregulation of many professional services markets (e.g. law and accountancy firms etc.), the contracting out of many government services (eg. refuse collection), private provision of services (eg. nursing homes), public-private partnerships in investment projects (eg. in inner-city areas), reducing subsidies for services (eg. dental care and opticians) and recent attempts to introduce quasi-markets within the state education and health sectors (see Young, 1986).

In this paper we survey the process of liberalisation of public enterprises in the UK since 1979. We do this because this is arguably the most notable of the UK's recent deregulation processes and is certainly the one aspect of the recent Conservative administrations policies that has attracted the most international attention. While the UK was not the first to undertake large-scale privatisation (Chile had a significant programme in the late 1970s), it seems to have been the most widespread and advanced of any in an OECD country. In terms of the extent and likely impact of the programme only the recent mass privatisations in transition economies seem more significant.

In what follows we begin by reviewing the history and genesis of the privatisation programme in Section 2. In section 3 we focus on the development of the regulatory systems designed for the telecoms, gas, water, airports, electricity and rail sectors. In section 4 we analyze the evidence on the effects of the economic effects of the privatisations. Section 5 offers a conclusion.

Section 2: The UK privatisation programme

Table 1 shows a list of the main privatisations in the UK since 1979. The time line highlights a number of features. The privatisations can be characterised according to the administration under which they occurred. During the first Conservative administration 1979-83, only companies which were already listed on the stock exchange (eg. British Petroleum) or which operated in competitive markets were privatised (Amersham and Associated British Ports) were sold off. It was during the second administration 1983-87 that the privatisation of major utilities began with the privatisation of British Telecom (BT) in 1984, then the world's largest public offer for sale and British Gas (1986). The third Conservative administration 1987-92 saw the privatisation of the water and electricity industries, the privatisation of electricity involving horizontal and vertical separation of state owned companies and the creation of a power pool. The fourth Conservative administration 1992-97

promises a first class tube for everyone.'; Halligan, L., 'Mandelson studies possible sale of BNFL', *Financial Times*, 26

involved the privatisation of companies previously thought to be unsaleable: British Coal, British Energy (which owns the newer nuclear power plants) and the Rail Industry.

2.1 The rationale for privatisation

The UK economy was in considerable disarray in 1979. The oil shock of 1973-74 had been followed by a period high unemployment, high inflation and low GDP and productivity growth. UK industry was increasingly lagging behind the productivity levels of comparator industrial countries. This seemed to be particularly true of industries in the public sector (see Pryke, 1981).

Marsh (1991) and Moore (1992) identify a number of reasons behind the government's privatisation programme:

1. *Reducing government involvement in industry.* For many conservatives this was an ideological aim of privatisation. Socialism involved ownership of the means of production and control of the 'commanding heights' of the economy. Until recently the Labour Party's 'Clause 4' asserted its commitment to nationalisation. Mrs Thatcher saw privatisation as a means by which she could destroy Socialism⁴. In economic terms we can interpret this aim as one of increasing the cost of government interference of in the day-to-day management of the economy (Perotti, 1995). Indeed Labour abandoned 'Clause 4' in March 1995 and dropped its plan to renationalise Railtrack, the rail infrastructure company, on the grounds of cost in October 1997⁵. At a more basic level privatisation removes companies from being forced to compete for scarce public funds in order to undertake investment projects.
2. *Increasing efficiency.* State owned enterprises were seen to be inefficient in 1979. Millward (1990) reports that productivity growth in terms of output per head 1951-73 was 3%p.a. in private manufacturing and 2.7%p.a. in public enterprises, while from 1973-85 the figures were 2.3% and 2.1% respectively. By comparison to the US, output per head in 1982 in the US railways was 4 times that in the UK, US coal 9 times more efficient and US electricity and gas 3.5 times higher compared with an average of 2.8 times higher for the whole of manufacturing.

September 1998, p.8.

⁴ See Thatcher (1993, p.676).

⁵ Rogers, R., 'Labour at Brighton: Prescott keeps Cabinet train on the rails', *The Herald*, 2 October 1997, p.6.

While total factor productivity comparisons show public enterprise doing slightly better than the rest of manufacturing and closing the gap with the US over the post war period, it is still the case that relative and trend productivity were poor in UK public enterprise at the beginning of the 1980s. There was clearly a lot of potential for increased productivity especially if US style management techniques could be introduced. It is interesting to note that much of the electricity distribution industry and parts of the rail industry have been purchased by US companies following privatisation.

3. *Reducing the public sector borrowing requirement (PSBR).* A striking consequence of UK privatisation was the huge revenues raised from asset sales (see Table 1). Privatisation revenue was equal to around 1-2%p.a. of GDP from 1984 to 1994⁶. These revenues were particularly significant in the late 1980s as the large privatisations of Telecoms, Gas and Water were undertaken. Additionally privatisations reduced the PSBR by increasing the corporate taxes paid by privatised companies and by removing their borrowing from the public sector. NERA (1996, p.29) found that a sample of 33 privatised companies (representing 75% of total privatisation proceeds) who in 1981-2 had cost the public sector £107m contributed in 1994-5 £8.4bn to the public sector, of which £2.6bn was corporation tax, £2.1bn debt repayment and £3.3bn asset sales proceeds. The reduced claim on the public sector was very influential in the privatisation of the water industry (Foster, 1992) where compliance with European Union water and sewerage directives was anticipated to require huge investments by the water companies.
4. *Curbing public sector union power.* Public sector enterprise unions were extremely powerful. Rail workers, electricity and coal workers were all capable of inflicting severe political and economic damage. Coal miners were credited with bringing down the Conservative government in 1974⁷. While the government's main method of reducing union power was via Trade Union legislation, privatisation was a contributor to sharply reduced union power. Privatisation reduced union power via the redundancies which followed privatisation, the contracting out of services associated with privatisation and via fragmenting industries so that coordinated action has become more difficult (e.g. in the rail industry where the number of companies increased from one to over 100). The fragmentation of industries has been accompanied by a decline in national

⁶ Source: ONS (1995) UK National Accounts 1995 Edition.

⁷ See Stewart (1978, pp.178-187).

wage bargaining, increased personal contracts and localisation of disputes especially given legislation outlawing secondary action (Brown et al., 1997).

5. *Wider share ownership and employee share ownership.* The number of individual shareholders has increased sharply since 1979 as a result of privatisation. Nigel Lawson (1992, p.210) reports that it was by accident that the government discovered the popularity of selling the shares at a discount to the public to encourage mass participation in the sale, when it substantially underpriced the public offer for Amersham International in 1982. This coupled with the need to ensure the successful sale of British Telecom (BT) in 1984 encouraged the government to mount large advertising campaigns to direct market the sale to individuals. The most famous of these was the 'Sid' campaign for British Gas which featured the catch phrase 'If you see Sid tell him' which highlighted the populist appeal of privatisation. The government combined preferential sales prices with staged payments, loyalty share bonuses for those who held on to the shares for 3 years and discounts on utility bills. The result of these financial incentives was to be huge public over-subscription and limited individual allocations for all of the post-1984 privatisations leaving institutions scrambling for shares at substantial first day premiums. Buckland (1987) however concluded that many investors subsequently sold their shares and of the continuing individual shareholders, few hold more shares in more than one privatised company. The result of this is that there has been no interruption in the long run trend towards increased institutional share ownership⁸. Employees benefited via free shares and larger allowed allocations of shares.
6. *Gaining political advantage.* The political history of privatisation can be traced through the memoirs of Margaret Thatcher (1993), Nigel Lawson (1992), Peter Walker (1991) and Cecil Parkinson (1992), who were the principal politicians involved. While no mention was made of privatisation in the 1979 Conservative Manifesto, Geoffrey Howe, the first chancellor of the exchequer did make reference to asset sales in 1979. However Margaret Thatcher reports that economic recession prevented much progress beyond selling government stakes in listed companies in her first administration. It was during the 1983-87 administration that the programme of privatisation was developed. Lawson had supervised the asset sales in the first administration as Chief Secretary to the Treasury and then as Energy Minister had been responsible for privatising Amersham International and Britoil. As then Chancellor he

⁸ See Moschandreas (1994, p.509).

enthusiastically promoted privatisation. Cecil Parkinson and Norman Tebbit handled the privatisation of British Telecom which turned out to be enormously popular. Peter Walker was responsible for the 'Sid' campaign surrounding British Gas. The popularity of the programme was widely trailed by the Conservatives in the run-up to their re-election in 1987. Indeed McAllister and Studlar (1989) found that even adjusting for class and education there was a significant impact of privatisation and council house sales on voting patterns. The 1987 election victory was then followed by water privatisation and then the complex electricity privatisation. John Wakeham impressively prepared the electricity industry for privatisation in less than a year (see Henney, 1994).

2.2 Criticism of government's programme

Although privatisation has been hailed as a great success in the UK it was not without its critics during the programme. Doubts were raised about the rationale behind the government's policy (see Kay and Thompson, 1986):

1. *Privatisation and managerial discretion.* Privatisation involved introducing private sector pressures on senior management in the public sector. As such it was not likely to be popular with these managers who were likely to slow down the process or interfere with it so as to improve the outcome for them at the expense of wider economic efficiency. The government was working to tight legislative programme and hence early privatisations involved compromising market structure in return for management cooperation. Button and Weyman-Jones (1994) note that this is the inevitable consequence of the structure of the game being played by the government and the management. This was particularly true in British Gas where the then chairman initially opposed the privatisation, but then enthusiastically supported it when it became clear that British Gas would be privatised as a monopoly supplier of gas in the UK. Similarly initial opposition from the chairman of the CEGB delayed the restructuring and privatisation of electricity generation and transmission in England and Wales. Yarrow (1989) argued that early privatisations of BT and British Gas simply replaced political discretion in the running of enterprises by managerial discretion for no measurable benefit in performance in the immediate post-privatisation period.

2. *Privatisation and the PSBR.* Some of the aims of privatisation cited in section 2.1 above are clearly contradictory. In particular the desire to increase efficiency and the desire to raise revenue. Clearly the government maximises asset sales by privatising a monopoly rather than a restructured industry. The privatisation of BT involved the vetoing of plans to break-up BT by the Treasury. Furthermore it seems to be the case that some privatisations actually worsened the long-run PSBR because the loss of the profit stream from the government's net revenue was not compensated by dividends and increased tax revenue⁹.
3. *Privatisation and competition.* Kay and Thompson argue strongly that it is competition that drives down prices and costs in the private sector not ownership per se. This seems to be borne out by comparisons between private and publicly owned firms in regulated markets such as electricity in the US, where there is no significant difference in costs between the different forms of ownership (see Pollitt, 95). In the case of potentially competitive industries it may be argued that privatisation is the only way to introduce effective competition, in the case of natural monopolies this argument does not hold. This leads to the question of why privatise natural monopolies such as water companies, gas and electricity transmission and distribution networks? In such cases privatisation will only lead to regulatory problems, monopoly prices and wasted investment.
4. *Privatisation, politics and shareownership.* Some have argued that privatisation was not a popular policy, Crewe (1988) cites contemporary opinion polls which consistently showed that a majority thought that particular privatisations were a bad idea (56% in the case of BT, 57% British Gas and 72% electricity and water). Worcester (1994) questions the success of the wider share-ownership policy which did not have as much impact as council house sales on voting patterns. Worcester suggests that privatisation has modified the culture of shareholding in the UK but has hardly impacted on public behaviour towards the stock market. We might therefore conclude that if discounting the share price was the price of wider share ownership it has not been a price worth paying, given the significant (inequitable) transfer of revenue from taxpayers to shareholders involved¹⁰.

⁹ Newbery and Pollitt (1997) found this in the case of the restructuring and privatisation of the CEGB, the electricity and transmission monopoly in England and Wales.

¹⁰ For evidence on the losses of revenue due to underpricing see Jenkinson and Mayer (1994).

2.3 Privatisation in context

We conclude this section by attempting to highlight the wider context in which the government's privatisation programme was proceeding. We highlight two of these, the impact of privatisation on industrial relations in the UK and the world wide trend towards privatisation.

Oulton (1995) concludes that improved industrial relations and educational attainment levels in the UK are the supply side policy successes of the recent Conservative government. The Conservative Party of 1979 clearly identified Trade Union (TU) power as part of the UK's underlying malaise¹¹. The contribution of privatisation to achieving this goal was undoubtedly significant (see Colling and Ferner, 1995). Before 1979 change within the public sector could not be achieved without the consent of the unions, after privatisation management have been able to adopt a much more aggressive stance towards change. In the electricity industry national wage bargaining broke up after privatisation, derecognition occurred in subsidiary companies, TUs took an advisory role, managers have been put on individual contracts and formally excluded from collective agreements and companies have communicated directly with employees, not through unions. Litwin et al. (1996) give accounts of the widespread reorganisation of working practices surrounding privatisation in British Airways and PowerGen (an electricity generation company) that has allowed large scale reductions in staff numbers. Some of these changes may have occurred anyway due to technological changes but privatisation has increased customer orientation, team working, personal targets and bonuses and contracting out of much manual work. Colling and Ferner conclude however that privatisation's impact per se on industrial relations is unclear. Arguably differing degrees of managerial skill among the companies have allowed some companies to make better use than others of the opportunities for reorganisation and the introduction of modern human resource management and training.

The World Bank (1995) surveys the worldwide trend towards privatisation which has been observed since the late 1970s. They highlight the huge scale of the transfer of assets involved and the enormous potential for such liberalisation in developing countries with high initial percentages of productive assets owned by the state. Their survey of developing countries identifies three aspects of a successful privatisation programme. First, the programme must be politically desirable in the sense that the political leadership must see benefits for itself and its own constituents. Second, the

¹¹ See Lawson (1992, pp.29-30).

programme must be politically feasible in terms of the leadership having the power to enact reform and overcome opposition. Third, there must be political credibility such that losers will be compensated and investors' property rights safeguarded. In terms of the UK all of these aspects were satisfied: Conservative voters would benefit disproportionately from privatisation and the Conservative administration had sufficient parliamentary support to push through the programme. The programme only faltered when in November 1994, with a small parliamentary majority and divided party, the government was defeated on proposals to privatise the Post Office¹². Finally, it was able to compensate most of the early losers - there were very few compulsory redundancies and generous early retirement and there were voluntary severance packages for those who left privatised firms as they downsized. It took a Labour government to attempt an expropriation of shareholder returns from the privatisation with the a windfall tax on the profits of privatised utilities following their election in 1997.

Section 3: The Development of the Regulatory System

3.1 The origin of regulatory system for privatised monopolies

The early privatisations following 1979 posed few competition problems. However with the privatisation of British Telecom the government had a problem of how to regulate a firm with a significant amount of monopoly power and which provided an important service. The problem of regulating utilities is not new (as Newbery, 1998 describes). Indeed the emergence of significant public ownership in gas, electricity and water can be traced to the need to control the prices charged by incumbent firms without allowing excessive duplication of assets which were subject to large economies of scale.

Faced with the privatisation of British Telecom and other utilities the government had a number of choices suggested to it in a report by Stephen Littlechild (1983):

1. *Rate of return regulation.* This method was extensively used in the United States and involves regulating the profits of utilities on the basis of an allowed rate of return on their capital assets. The advantage of this system is that it is easy to administer and enforce and provides

¹² Owen, D. and Brown, K., 'Down but not out for the count', *Financial Times*, 4 November 1994, p.9.

transparency. It actually operates via a quasi-judicial process where regulated companies or their customers may apply for changes in prices on the grounds of a change to the rate of return on the companies assets. The major problem with this method of regulation is the perverse incentives that it gives companies, both to increase their capital assets (rate base) and not to seek cost reductions (the Averch-Johnson effect)¹³.

2. *The output related profits levy.* This method was suggested by Sir Alan Walters, Mrs Thatcher's chief economic adviser. It involves having a profit tax system for utilities where the tax rate declines as output rises. In theory this could encourage the regulated firm to produce more output than under a constant tax rate in order to maximise its profits.
3. *A local tariff reduction scheme or RPI-X.* This method was proposed by Littlechild and involved setting a maximum price for local telephone calls which would then be increased over a period by the rate of inflation (RPI) minus some X factor which might reflect expectations about the size of likely future productivity growth. The advantage over the other two methods was that it combined simplicity with incentives to minimise costs within the firm.

The government accepted the RPI-X proposal and set up a regulatory agency or independent government department (The Office of Telecommunications, OFTEL) to oversee the regulation of the prices and the service provided by British Telecom. OFTEL was headed by a Director General of Telecommunications with statutory powers and duties independent from the government. The restructuring of the industry required each telecommunications provider to have a license to operate in the telecommunications market. RPI-X price control is part of the license conditions for British Telecom. This pattern of RPI-X, licensing and a regulatory agency headed by a Director General with statutory powers was followed in gas, airports, water, electricity and rail. The system has been evolving, but has provided transparency in regulation and the freedom for each regulator to focus on the regulatory issues particular to his or her industry.

Initially it was envisaged that RPI-X regulation in telecoms could be 'regulation with a light hand', which would simply prevent excessive exploitation of monopoly power until competition caused regulation to be unnecessary. At the same time as licensing BT, the government licensed a

¹³ See Vickers and Yarrow (1988).

competitor, Mercury, which would also be able to connect customers, develop its own trunk network and have access to BT's local networks. The idea was that as competition developed between these two and between alternative technologies for voice telephony the need for OFTEL would disappear. Indeed one of the statutory duties of the telecoms regulator is to promote competition. Subsequent privatisations however recognised from the beginning that competition is likely to be limited for the foreseeable future, so that the statutory duty of the water regulator is only to 'facilitate' competition in the limited instances where it might be possible.

3.2 The evolution of RPI-X regulation

Table 2 gives some of the details of how RPI-X regulation has evolved in the UK. Each industry has a separate price control formula which is set for a number of years (4-5 years). The price control is then revised for a further regulatory control period. The price control applies to prices of monopolised services and not to services where sufficient competition has emerged (i.e. to inland telephone calls, not to telephony equipment). The price control may apply to both the fixed charge and the unit charge for a service (e.g. line rental for telephones have a different price cap to telephone call charges). In industries where some components of costs are volatile and largely outside the control of the regulated company there is provision for pass through of costs (e.g. security costs at Airports, costs of purchased power in electricity distribution). RPI-X regulates prices but has been augmented with quality regulation which involves fixed penalties for failure to meet service standards which are also part of the license conditions of regulated companies (e.g. fixed payment to customers if faulty telephone lines are not repaired within two working days).

The evolution of RPI-X since 1984 has led to the emergence of a number of key issues to be decided in the regulatory process:

1. *The extent of the activities which need to be regulated.* Price control in telecoms initially covered all calls. However in the latest price control period, international calls are effectively no longer regulated since it is deemed that there is sufficient competition in this market. By contrast in electricity regulation, initially it was assumed that the power pool within which bulk generated power is traded would not require regulation. However in 1994/5 and 1995/6 the electricity regulator did impose a price cap on the bids that the incumbent generators could offer in the

power pool following accusations that they were colluding to raise prices (see Green, 1996, p.13).

2. *Setting the value of X in the price cap.* Four elements have emerged in setting the price cap. The amount of operating expenditure needed by companies to cover ongoing costs of supply (OPEX), the amount of capital expenditure which needs to be financed from profits (CAPEX), the allowed rate of return on assets and the size of the initial asset base.¹⁴ The setting of OPEX requires estimation of the likely future cost savings which are possible. The setting of CAPEX requires estimation of the investment profile of the companies. The calculation of the allowed rate of return requires the assessment of a fair return to the shareholders funds. The size of the initial asset base involves an assessment of the opening value of the asset base at the beginning of the previous review period plus allowed new investment less depreciation since then. Each of these is the subject of detailed analysis by the various regulators. Currently, the water regulator is proposing new X (K in water) factors (see OFWAT, 1998). He estimates OPEX by reference to past trends in costs and CAPEX by detailed auditing of investment plans and requirements for environmental clean up expenditure to be carried out by water companies. The regulator calculates the allowed rate of return by adding an equity premium appropriate to companies in the risk class of water companies to an estimate of the risk free rate. The initial capital base calculated from the initial market value (including debt) of the water companies at privatisation plus net capital expenditure since then. Other regulators have used similar analysis in calculating allowed prices.
3. *Price rebalancing.* An early issue which emerged in British Telecom was the regulation of two-part tariffs and the extent to which more of the cost the system should be recovered from fixed charges rather than call charges. Rebalancing in BT towards loading more of the cost of calls onto fixed charges can easily be seen to be economically efficient, given the low marginal costs especially of off peak calls, however high line rentals and connection charges raise distributional issues such that poor consumers end up paying proportionately more of the cost of the system. A related issue is the question of the extent to which BT should have been free to set prices within its price basket subject to an average price cap. An average price cap tended to encourage it to make predatory price cuts in markets where some competition existed and increase prices in

monopoly markets¹⁵. Thus domestic call charges rose in the early years relative to international calls. International calls have now been removed from the tariff basket.

4. *Access pricing issues.* Access prices are the prices which users of a network must pay to the network owner. If the network owner competes directly with other users requiring access, such as is the case between Mercury and BT over the local telephone network, then the price of access needs to be regulated in order to prevent BT charging such high access prices that Mercury is effectively denied fair access over BT lines. Baumol and Willig's efficient component pricing rule suggests a solution to the problem of what the allowed price should be¹⁶. The key point is that it must reflect both the marginal cost of access and the loss of any contribution to fixed cost which the loss of a call from BT to Mercury will entail, at lower access charges there may be inefficient transfers of calls from the incumbent provider to new entrant when marginal costs are higher for the new entrant. Low access charges further result in network owners not being able to earn a fair return to the capital invested in their network, if they lose final sales to rivals.
5. *The regulation of quality.* The essential issue here is that price cap regulation does not allow companies to increase both price and quality, and hence optimal incentives to maintain or improve quality do not exist. The issue of the regulation of quality first emerged in 1987 when it was reported that 23% of the payphones in the UK were not working at one time. BT had a statutory requirement to operate a payphone system even though it made a large loss. However there was no requirement to make payphones actually work¹⁷. Now all the regulated industries have quality regulation, however this is subject to the problem that companies may focus only on those measures of quality which the regulator focuses on and not others which customers may value.¹⁸
6. *The length of the regulatory lag.* It is generally accepted that RPI-X and US style rate of return regulation mainly differ in the length of the regulatory review period. During the period between

¹⁴ See for instance MMC (1995, pp.100-102) where the calculation of the initial value of the assets (as of the beginning of a new regulatory review period) of a regulated electricity distribution business is discussed.

¹⁵ See Armstrong et al. (1994, p.224).

¹⁶ See Armstrong et al. (1994, p.234-39).

¹⁷ See Randall, C., 'Telecom carpeted over out-of-order phone boxes', *Daily Telegraph*, 24 September 1987. On quality issues in the regulation of British Telecom see Armstrong et al. (1994, p.221-2).

¹⁸ See, for example, OFFER (1997) for standards in the electricity industry. Fixed penalties are in place for failure to meet agreed standards.

price reviews firms can keep any cost savings they can make, or extra profit coming from higher than predicted demand for their services. Thus there are strong incentives to reduce short run costs and to stimulate demand growth. However capital investments are long lived in all of the regulated industries and this means that companies may have returns to investments appropriated at the end of the review period. This creates a hold-up problem and this may lead to underinvestment by the firms. However the regulator will want to reduce prices in order to pass benefits of cost reductions through to customers. There is clearly a trade-off between these two. In the UK the regulatory lag has mostly been set at 4-5 years, though the rail train operating companies have effectively been given a 7 year lag period. However these lags have been associated with battles between regulated companies and their regulators. British Airports Authority (BAA) and its regulator, the Civil Aviation Authority (CAA), disagreed over whether BAA has been given enough incentive to go ahead with investment in a 5th passenger terminal at Heathrow Airport¹⁹. The Train Operating Company, Connex, and the Rail Franchising Director disputed over whether to extend the Connex franchise from 7 to 15 years to give the firm the incentive to invest in new trains²⁰.

7. *Information disclosure.* Theories of optimal regulation (see Baron and Myerson, 1982) stress that it is the information asymmetry between the regulator and the regulated firm which makes the regulator unable to incentivise the regulated firm in such a way as to maximise social welfare. Initially the government was unwilling to burden the companies with onerous information disclosure requirements and so the companies were simply encouraged to voluntarily reveal information to the regulator. This led to battles between the Gas regulator and British Gas over access to documents. Later legislation (e.g. in electricity) has required companies to give all information requested to the regulator. However it is still the case that companies can present figures on future costs and capital expenditure which exaggerate their revenue requirements in future years. The current OFWAT proposal (1998, p.42) on operating cost expenditure is much less than the companies project. On the announcement of the proposal, water company share prices went up, indicating that market expectations were that these cost projections could be easily met by the companies.

¹⁹ See Betts, P. and Rice, R., 'Industry regulator lands BAA with a problem', *Financial Times*, 10 July 1991, p.22.

²⁰ See OPRAF (1998a, p.26).

8. *Regulatory discretion.* One of the key dangers of regulation is regulatory capture (Stigler, 1971), where regulators end up acting on behalf of the companies in order to increase their own welfare either through having a quieter life or through a monetary payoff from the company. This does not seem to have happened in the UK where prices have been cut very aggressively by regulators since privatisation. The regulators have followed different combinations of rules, analysis and judgement and some have been judged more successful than others. This emphasises the role of discretion in the UK regulatory system, where the Director General is statutorily responsible for the regulation.

9. *The role of comparators.* The setting of X for an industry depends on estimates of what operating and investment costs might be required for a particular monopoly firm. Estimates of these can be obtained from analysis of the costs incurred by similar firms. This facilitates yardstick regulation (Shleifer, 1985) whereby X can be set with regard to the average efficiency of firms within the industry hence giving individual firms better incentives to cut their own costs. Comparisons of efficiency are particularly important in setting initial prices at the start of the regulatory review period, thus OFWAT (1998) use such analysis to inform how much initial prices should fall - less efficient firms being required to reduce prices (and hence costs) by more than more efficient firms. Comparators are thus important in econometric and non-parametric estimates of cost efficiency and loss of a comparator impacts on the accuracy of the estimated cost efficiency. MMC (1994) reported that the value of the loss of one water company by merger with another would have a present value of £50-250m.

10. *Regulation and investment.* We have noted how RPI-X setting involves the regulator taking a view about the required investment in the industry. One of the problems in UK regulation is that the regulator is increasingly required to take a view on what the best sort of investment in a regulated industry is. Companies present business plans suggesting what investments they would like to make and it is essentially up to the regulator to decide which plans should be financed. This involves the regulator hiring consultants to double-check the companies plans. In railways, the rail regulator has had to check that Railtrack is spending its capital budget which it is required to do efficiently (ORR, 1998).

3.3 Other Regulatory Issues

All of the issues that we discussed in the previous section relate to issues that have arisen with RPI-X type regulation. A number of other regulatory issues have arisen since privatisation which the industry regulator and the main competition authorities have had to face. These issues are well documented in the Monopolies and Mergers Commission (MMC) reports that have been published since 1984. The MMC adjudicates on disputes between the regulator and the companies. Table 3 contains the details of these reports for the telecoms, electricity, gas, water and airports industries.

3.3.1 *Industry Structure Issues*

It was widely recognised at the time of privatisation that British Gas, British Airways and the electricity generators were privatised with an unnecessarily large amount of monopoly power. There were some suggestions that British Gas should be broken up before privatisation²¹. It might have been possible to do this by the creation of regional distribution companies and a separate supply company. Such restructuring might have prevented subsequent allegations that it was using its ownership of the gas distribution network to slow the penetration of the gas supply market by competitors (MMC, 1993). In 1996 British Gas decided to split in to BG plc, which retained ownership of pipes and gas production facilities, and Centrica plc, the gas supply business. British Airways operated as the main carrier from its hub at Heathrow Airport operating as a duopolist on many international routes with control over landing slots. The government has gradually pressured British Airways (BA) into giving up slots at Heathrow to facilitate competition with third carriers, such as Virgin Atlantic, in return for more favourable treatment of BA's mergers with other UK carriers and its entry into alliances with other overseas airlines. National Power and PowerGen, the electricity generators, were privatised with a near duopoly over the price-setting plant in the power pool, in spite of studies which have shown the substantial welfare gain to having 5 price setting firms (see Green and Newbery, 1992). The electricity regulator has fought a long running battle to force these companies to divest large quantities of plant to other firms (see McDaniel, 1998). Each of these situations illustrates the importance of getting the structure of the industry right at the time of privatisation.

²¹ See Kay and Thompson (1986, p.30).

3.3.2 *Takeovers and Mergers*

The government did privatise several firms within most of the industries we have been examining. Initially most of these firms were protected from takeover for a period of 5 years. However once this initial period was over and in some cases before, mergers were proposed of horizontal, vertical and diversifying types.

Table 3 includes several MMC investigations of horizontal merger proposals in airlines, electricity distribution, water supply and airports. In water supply and electricity distribution some horizontal mergers have been allowed because the mergers do not involve an increase in monopoly power within the individual franchise area and it was felt that the benefits in terms of efficiency savings would outweigh the inefficiency from less information on comparative efficiency within the industry. In the airports case the MMC felt that there was a sufficient increase in market power in the relevant market - air-travel from Northern Ireland - to outweigh any efficiency benefits of integration.

Most of the regulated industries involve firms in vertical relations along a supply chain. Table 3 reports proposed mergers in telecoms (calls and telephony equipment), electricity (generation and distribution and supply). The proposed BT merger with Mitel was approved because BT's supposed inability to exploit the benefits of integration. So it proved, as BT sold Mitel in 1992. In electricity the government initially referred the mergers of PowerGen/Midlands Electricity and National Power/Southern Electric to the MMC, the Director General having approved them. The MMC recommended that mergers be allowed to go ahead subject to conditions but the government decided to prevent them (e.g. MMC, 1996a). However recently the government has approved the merger of PowerGen with a different regional electricity distribution company, East Midlands Electricity, in return for further divestiture of generating plant by PowerGen.

Several of the privatised water and electricity companies have merged to form multi-utilities: Scottish Power (Scottish Power-Manweb-Southern Water), Hyder (South Wales Water-SWALEC), and United Utilities (North West Water-NORWEB). These mergers have been justified on the grounds that they do reduce costs as much of the overhead is shared between the two businesses especially if they operate in the same franchise area. Scottish Power is the most aggressive multi-utility offering gas, telecoms and electricity within its electricity franchise area in southern Scotland. It has been

using its customer base in different parts of the country to offer gas and electricity supply in the competitive consumer markets opening up in these industries. The problem with multi-utilities is that the costs within a given business of the multi-utility are no longer useable for comparison with non-multi-utility businesses. Multi-utilities also have distinct market power advantages relative to new entrants who cannot offer the range of services that a multi-utility might offer.

In addition to the above issues might be added the issue of foreign ownership of utility assets. Many of the regional electricity distribution companies are now owned by US power companies. Some of the water companies are owned by French companies. While there may be little economic issue in this, this may raise fears about national security if such assets are controlled by foreign companies.

3.3.3 Abuse of market power

In addition to standard regulatory issues in the limitation of the exercise of monopoly power by regulated incumbent firms, accusations have been made with respect to price discrimination, predation and collusion, each of which have involved references to the MMC.

British Gas was accused in 1986 of practicing price discrimination between industrial gas customers who had access to alternative energy supplies (e.g. electricity for equipment) and those who did not. The MMC (1988) found that British Gas had been practicing such price discrimination in violation of the Competition Act. Predatory pricing to drive out rivals has been prevalent in the deregulated bus industry. Between 1985 and 1994 there were 250 allegations of predatory pricing in the bus industry following deregulation and the privatisation of local bus companies (Myers, 1994, p.13). The MMC has investigated several cases: a typical case involved the large bus company, Stagecoach in predatory pricing in Bognor Regis on certain routes where it was challenged by a new entrant in 1991-92 (MMC, 1993). Stagecoach introduced new services which targeted the entrant, incurred large losses and eventually drove the entrant out of the market. The MMC found Stagecoach had engaged in a deliberate anti-competitive practice and ordered it to put up prices on the route. Collusion was alleged in the electricity pool (see McDaniel, 1998) and in the airline industry where privatised BA sought to enter into alliances with other major carriers. The MMC found that its alliance with Sabena was not against the public interest (MMC, 1990), however its latest tie-up with

American Airlines has forced British Airways to relinquish further transatlantic landing slots at Heathrow.

The recent Competition Act (1998) has strengthened the law on anti-competitive agreements and abuse of market power and comes into force on 1 March 2000. The deregulated bus industry is likely to particularly feel the effect of stronger powers of investigation, larger penalties, third party rights and interim halts to alleged anti-competitive behaviour (see DTI, 1997).

3.4 Conclusion on the regulatory framework

The overall picture that emerges from the above review of regulation of privatised industries is one of the high regulatory cost of privatisation. The six major regulatory offices – OFFER, OFTEL, OFGAS, OFWAT, OPRAF and ORR - involve direct costs of around £60m per annum in addition to the compliance costs within the companies.²² This is a substantial deadweight loss to the economy²³. In addition there are the indirect costs of the distortions caused by regulatory games between the regulator and the companies, regulatory uncertainty and regulatory mistakes.

RPI-X regulation is an evolving form of government control of companies with substantial market power, it requires sophisticated implementation, continual adjustment to new market problems and is a cumbersome alternative to market competition. However prices have fallen substantially in telecoms, gas and electricity, large amounts of capital expenditure have been financed in water and airports and there is the prospect of sharp declines in the level government subsidy to the rail industry in the medium term as well as large infrastructure improvements. Thus it is difficult to argue that RPI-X has not been a flexible and effective form of price control in the UK.

Currently the nature of utilities regulation in the UK is being reviewed (see DTI, 1998). The gas and electricity regulatory offices are due to merge (from 1 January 1999 they have the same Director General) reflecting the close relationship between the two industries as consumption substitutes and

²² OFFER=The Office of Electricity Regulation, OFTEL=Office of Telecommunications, OFGAS=Office of Gas Supply, OFWAT=Office of Water Services, OPRAF=Office of Passenger Rail Franchising, ORR=Office of the Rail Regulator. In addition the CAA's (Civil Aviation Authority) Economic Regulation Group has responsibility (among other responsibilities) for airports regulation, the cost of this Group is around £9m p.a.

at a time when a growing percentage of electricity is generated by gas. Multi-utilities pose further questions about the optimal number of regulatory offices. Meanwhile the government seems to keen to reverse the trend towards arms length regulation of utilities by threatening tougher regulation unless utilities improve customer service, cut prices and top executive pay.

Section 4: Analysis of the effects of privatisation and deregulation

4.1 Multi-firm studies

The key question raised by the discussion so far is whether privatisation and deregulation has actually led to efficiency improvements and if so by how much? In this section we first review a number of the major multi-firm studies which have attempted to gauge the overall impact of the programme, before going on to focus on the effects of privatisation in 5 specific cases.

The multi-firm studies are summarised in Table 4. It can be seen that a number of different types of data have been examined to address the issue of whether privatisation raises economic efficiency. Labour productivity and total factor productivity measures are the most popular. Both of these suffer from serious shortcomings as measures of economic efficiency. Labour productivity simply focuses on the productivity of a single factor while total factor productivity requires assumptions about the relative weights of the different factor inputs to be made. In both cases no account is taken of the changing nature of output or technology over the period of measurement, so that it is not clear what the null hypothesis for the effect of privatisation should be. Neither provide measures of overall economic efficiency because they do not provide any information on the price effect of privatisation and hence facilitate the comparison of privatisation's effect on allocative and not just productive efficiency.

Hutchinson (1991) tries to test both for the ownership effect on privatisation and the change in government effect. It may be that it is not privatisation that causes increased efficiency in those companies that were in state ownership in 1979 but the arrival of Mrs Thatcher as Prime Minister. He looks at the performance of British Aerospace, Rolls-Royce, Ferranti, Rover, National Freight

²³ The cost is small in relation to the value added in the industries concerned - electricity, telecoms, gas, water and railways - but it should be compared against the deadweight losses of the higher prices which might arise from a cheaper form of regulation.

Corporation and British Airways. While these firms do seem to underperform before 1979 relative to their reference firms their post-1979 performance gives limited evidence for both hypotheses. British Airways and NFC outperform their private rivals after 1979 but before privatisation. British Aerospace shows no change in its relatively good performance 1970-86 in spite of changes in government and ownership (nationalised 1976 and privatised 1981). Rover however shows a relative erosion of labour productivity performance throughout the sample period. Overall the results provide no evidence for the ownership hypothesis and statistically insignificant support for the 'Thatcher effect'.

Bishop and Thompson (1992) simply compare the labour and total factor productivity growth rates over two ten year periods 1970-80 and 1980-90 for a sample of large enterprises that were state owned in 1980. The most spectacular improvements come in British Steel and British Coal. Labour productivity growth in British Steel rises from -1.7%p.a. to 13.7%p.a. and -2.4%p.a. to 8.1% in British Coal. Total factor productivity growth also improves in these firms. The Post Office and British Rail also show significant improvements. Interestingly British Telecom, BAA and British Airways show falls in total factor productivity growth, though these firms experience slower output growth as their industries mature between the periods.

Haskel and Szymanski (1992) attempt to test for the impact on labour productivity growth rates of state owned enterprises in their sample by incorporating dummy variables for the introduction of competition, and managerial change and ownership change. Competition is modeled via the market share of the firm, the coefficient on this variable is negative and strongly significant indicating that competition improves labour productivity. A series of management dummy variables for the introduction of private sector style management in different firms has mixed results, British Coal and British Steel exhibit significant positive coefficients, however none of the other 7 companies experiencing managerial change exhibit significant effects. Ownership change dummies are only significant for BAA and BA but not British Gas or BT.

Bishop and Green (1995) start from the premise that it was much easier for privatised firms to perform well during the growth period of the 1980s and hence set out to examine how well privatised companies did during the recessionary period 1990-94. They looked at a number of firms, some in competitive markets, others in regulated markets. Of the firms in competitive markets,

Amersham, British Airways, Cable and Wireless, Associated British Ports all exhibited outperformance of the relevant market index in their share prices over the period 1990-94. Of the other competitive firms, British Steel and Rolls Royce were operating in exceptionally difficult global market conditions and were generally considered to have performed well in the conditions. The remaining competitive firm, Enterprise Oil, was engaged in a failed takeover bid which affected its share price performance. Bishop and Green are critical of the performance of the three regulated firms they look at - BT, BAA, and British Gas. Profitability declines sharply over the period and total factor productivity grows slowly in BAA and British Gas compared with the Post Office and comparably to growth in British Rail and British Coal - generally thought to be poorly performing public enterprises. Only British Telecom, under a tighter price-cap and increasing competitive pressure, shows significant productivity growth over the period.

Koedijk and Kremers (1996) attempt to explain differential productivity growth in 11 EU countries, including the UK, with reference to product market regulation and labour market regulation variables. Essentially their technique is to regress average labour productivity growth rates in the whole economy over the period 1981-93 on either or both of these variables. The variables are simple averages of the rank orders of degree of regulation (1=least, 11=greatest) and hence a negative coefficient indicates that less regulation increases productivity growth. The product market regulation variable is an unweighted average of similar rankings of ease of business establishment, strength of competition policy, degree of public ownership, industry specific support, shop hours and progress in the implementation of European single market directives. Koedijk and Kremers estimate a coefficient in their product market deregulation only regression of -0.16%. Thus a move from 7 to 1 on degree of public ownership via mass privatisation in the UK would reduce the average product market regulation variable by 1 (given that public ownership is only one of its six determinants) and raise productivity growth by 0.16%. This is an extremely crude piece of analysis in that the use of rankings and their weightings of the variables are arbitrary. It is also the case that the UK's performance is being compared to that of other countries with similar degrees of deregulation not to what it would have done in the absence of deregulation. Also there is no modeling of demand factors or other important explanatory factors in productivity growth, such as education.

Parker and Martin (1997, chapter 12) compare the performance of 11 privatised firms. For each firm they compare the performance of the firm during the period of nationalisation (as far back as 1973)

with four periods: pre-privatisation (between announcement and actual privatisation), immediate post privatisation, recession (1990-92) and the latest period (1993-94/95). They compare four sets of variables: labour productivity, total factor productivity, value added growth, rate of profit. This gives 172 potential comparisons. The overall picture is extremely mixed, 82 measures show a rise, 77 a fall. Privatisation has positive impact on profits (28 against 12), privatised firms have done better recently and in the pre-privatisation period. Jaguar, British Steel, BAA and Rolls Royce show a majority of falls. It is not clear what inference can easily be drawn from this as clearly the counterfactual - variables should be greater in private than public sector - does not adjust for underlying rates of technical progress or demand conditions.

There are two sets of conclusions that can be drawn from the above studies. One set based on the overall impact of privatisation, the other on the relative performance of individual firms.

The overall impact. Privatisation itself does not seem to be associated with an acceleration of productivity growth or profitability. It seems that management changes within the public sector prior to privatisation did however lead to improvements in performance prior to privatisation. Privatisation does have a positive impact on financial performance rather than productivity. There is evidence that firms in regulated industries exhibit improvements in performance only when regulation is tightened or competition increased.

The performance of individual firms. Some privatisations were a clear success: British Airways, Cable and Wireless, Amersham International. Some reorganisations prior to privatisation were a clear success: British Steel and British Coal. In the regulated industries BT and British Gas perform well in absolute terms but not relative to prior to 1980. The privatisations of Jaguar and BAA seem to have yielded little benefit. We focus on a number of individual firms and industries more carefully in the following sub-section.

4.2 Specific case studies

In addition to multi-firm studies a number of papers just focus on one company or industry. We examine 5 such cases. Each highlights different aspects of the liberalisation process.

4.2.1 British Airways

British Airways was privatised in 1986 and since been a very successful international airline with a hub based around London's Heathrow airport. The transformation of BA began in 1979 with the announcement of the government's intention to privatise the company. John, later Lord, King became chairman in 1981 and Colin Marshall became chief executive in 1983. These two are credited with a radical transformation in BA's productivity and performance prior to privatisation, with staff numbers falling by 30% between 1979-86 (see Litwin et al., 1996). Martin and Parker (1997, p.205-6) note that performance since 1986 has been mixed. Vogelsang and Green (1994), using social cost benefit analysis, calculated net gains to society of the privatisation of £680m of which £770m goes to shareholders, £315m to the government while customers lose by £325m and competitors lose by £85m (1987 prices).

BA's privatisation has raised competition issues. The government's Civil Aviation Authority (see Baldwin, 1990) noted that BA had a dominant position in UK civil aviation prior to privatisation. It was recognised that there was a tradeoff between BA's strength as an international airline and competitiveness in the internal market. The government was largely sympathetic to BA and did not propose any radical restructuring prior to privatisation. Quite the reverse was apparent when BA was allowed to take over its major domestic rival British Caledonian in 1987. As part of the conditions of that merger BA had to relinquish 5000 landing slots at Heathrow but its domestic market power was increased. Since then BA has been under pressure to reduce its slots at Heathrow to facilitate further competition notably from Virgin Atlantic (see Jones and Pollitt, 1995). Baldwin (1990) considered the regulatory regime to have been too lax with respect to BA. The BA privatisation suggests the potential for privatising a firm in a competitive industry but also the regulatory problems arising from the privatisation of firms with significant market power.

4.2.2 British Telecom

The privatisation of British Telecom appears to have been a success on many measures, prices have fallen significantly, while productivity and profits have risen. Pitt (1990) suggests that privatisation transformed BT's corporate culture, internal organisation, strategy, and industrial relations in ways that facilitated more rapid growth and productivity improvement. Indeed Vogelsang et al. (1994) conduct a social cost benefit analysis of the privatisation of British Telecom which quantifies these positive effects. Society gains £10bn (of which £1bn accrues to foreign shareholders). Of this total £3.7bn goes to shareholders, £2.25bn to the government and consumers gain £4.15bn.

Vogelsang et al. note that the productivity improvement results from technological improvement and not privatisation per se, though privatisation does lift the investment constraint imposed by the Treasury and hence facilitates a large increase in fixed capital formation. The price effects are enforced by regulation. The privatisation thus reveals the importance of privatisation in encouraging investment and the role of regulation in passing efficiency gains in natural monopolies on to customers. Privatisation does not appear to have improved operating efficiency sharply until 1991 when downsizing of labour force began to accelerate, under pressure of competition. Before then rapid productivity growth is largely a function of output growth, which is partly related to falling prices.

Prior to privatisation the government licensed another network competitor, Mercury, and began a 'duopoly policy' in telecoms with the aim of developing an alternative national network (see Beesley and Laidlaw, 1995). This was to provide the competition that would eventually render the regulation of BT unnecessary. Initially competition from Mercury was ineffective as the interconnection agreement between BT and Mercury was unfavourable to Mercury. After 1987 Mercury did begin to emerge as a serious competitor to BT in some areas but BT's market share was eroded only slowly. 1990-91 saw a review of the duopoly policy and the end of the policy with alternative licenses being offered. Cable and mobile phone companies can now offer fixed link telecommunications services in direct competition to BT. This has resulted in much more competition since then, such that effectively only BT's inland phone charges are now regulated. Competition is now seen as the primary means of improving services and prices in telecommunications.

4.2.3 British Gas

Price and Weyman-Jones (1996) find that productivity growth accelerates around the time of privatisation, comparing 1977-8 through to 1990-1. This acceleration in productivity seems to begin around 1983 at the time when the government tightened its financial control of British Gas. British Gas however has only begun to rapidly reduce its headcount in recent years during which time it has faced sustained criticism of the pay rises of its chief executive²⁴ and its quality of service record²⁵.

The decision to privatise British Gas as a natural monopoly and the requirement on the regulator to promote competition has led to difficult relations between the company and its regulator, OFGAS. As Table 3 shows there have been a number of references to the Monopolies and Mergers Commission. In 1988 the company was held to be abusing its monopoly power in the unregulated industrial gas market by charging higher prices to customers with alternative sources of supply. This practice had been occurring before privatisation but privatisation made it possible to intervene to prevent it (Price, 1994). In 1991 price regulation was tightened and some requirement to achieve efficiency gains in gas purchase was introduced. British Gas was then required to lose 60% of the contract gas market by 1995 but negotiations on this became deadlocked and the company was again referred to the MMC which reported in 1993. The MMC (1993b) recommended the separation of the company into a supply business and a transportation and storage business. The government rejected these proposals but did announce the rapid introduction of full supply competition by 1998. In February 1997 the company voluntarily demerged into Centrica (the supply business) and BG Transco (the transportation business). Waddams-Price (1998) sees the development of competition as a triumph of regulatory determination against the odds: in spite of the uncompetitive market structure set at the time of privatisation the regulators have managed to introduce substantial amounts of competition into the market.

Competition has resulted in a rapid loss of market share for British Gas from 91% to 29% of the industrial market (1991-1996). Full supply competition has resulted in significant price reductions for residential customers who do switch but relatively little switching of suppliers (Hancock and Waddams-Price, 1998). While prices have fallen for most consumers, a small group of high cost, low

²⁴ See Lewis, W., 'Gesture to the boardroom', *Financial Times*, 26 May 1995, p.17.

²⁵ See Corzine, R., 'British Gas complaints up 94%', *Financial Times*, 17 February 1995, p.11.

usage residential consumers will face higher relative prices as a result of competition leading to increased price discrimination.

4.2.4 The Water Industry

Lynk (1993) examined the efficiency of 28 statutory private water supply companies and the 10 regional water and sewerage companies (WASCs) over the period 1979-80 to 1987-88. He used stochastic frontier analysis to calculate the relative inefficiency of the public and private water companies. He found that the publicly owned companies were less inefficient on average than the private water companies. This provided evidence against the argument that privatisation in water supply will improve cost efficiency.

The 10 WASCs were privatised in 1989 as natural monopolies. It was envisaged that product market competition might develop via contracting for bulk supply from existing companies, common carriage via a national water grid, cross border competition at the boundaries of water companies franchise areas. Cowan (1994) concludes that none of these routes to competition is likely to be significant factor in the development of the industry. The regulator has therefore concentrated on introducing yardstick regulation of water companies in the absence of competitive pressure. There seems to be accumulating evidence that the cost efficiency of water companies has improved significantly since privatisation under the pressure of yardstick regulation and the capital market pressure operating through the introduction of more efficient management techniques combined with takeover pressure.

A major problem with water regulation is that residential pricing has traditionally been based on the rateable value of the house of the customer not on the usage (see Cowan, 1998). This makes the introduction of economically efficient prices for water difficult while reducing the distributional problems which would be caused by moving to use based charges. Metering is expensive for small customers and is not widespread. The water industry has also been loaded with environmental responsibilities for investments in water and beach quality. These financial requirements are onerous and represent a tax on water customers to pay for public goods. The regulator has clearly separated the contribution to prices associated with economic regulation from those associated with

environmental regulation in his latest price review proposals, leaving it to the government to decide what level of environmental taxes to levy from the water industry.

4.2.5 The Rail Industry

The privatisation of the rail industry was arguably the most complex privatisation (see Bradshaw, 1998, Kain, 1998 and Joy, 1998). It occurred in response to a 1991 EC Directive which called on member states to introduce open access rights to enable third-party operators to access the EC rail system. In response to this the government separated British Rail, the state owned rail company, into more than 100 other companies which were transferred to private ownership. Railtrack, the railway infrastructure company, was floated on the stock market in 1996. BR's infrastructure support departments and other central services were sold off by tender. BR's rolling stock was sold by tender as three rolling stock leasing companies (ROSCOs). BR's freight train operations were sold by tender as 6 companies. Finally passenger train operations were franchised to 25 Train Operating Companies (TOCs).

The regulation of these companies is via the Office of the Rail Regulator who regulates Railtrack's access charges for use of the network, ensures coordination between the companies on timetables, information and ticketing, and regulates Railtrack's investment plans. The 25 TOCs are overseen by the Rail Franchising Director which draws up franchise agreements, including the degree of subsidy each TOC gets. Franchises are for period of 7 to 15 years and incorporate declining annual subsidies over their lifetime such that subsidies fall from £2037m in 1996/7 to £729m in 2003/4 (Kain, 98. p.257).

Kain (1998) identifies a number of emerging features of the industry. First, pressure to consolidate ownership. In 1998 9 companies and 4 consortia own TOC franchises while one company owning a TOC has acquired a ROSCO. There is likely to be further pressure to reintegrate the industry. Second, private ownership has created incentives for new investment in new trains, new routes and in rail freight. Third, open access is to be introduced and is likely to emerge on some routes. Fourth, performance monitoring is extremely important. Recent regulatory pressure, including fines, encouraged the TOCs to improve performance in the operation of national rail telephone enquires centre. Fifth, network integration does have significant benefits and is necessary if safety standards

are to be maintained. Sixth, regulators are extremely powerful in an industry where much monopoly power remains. Standards of service have declined recently²⁶ and the regulator is likely to be significant in any attempt to improve service which is hampered by coordination problems between TOCs (one company's engine failure reduces the efficiency of another using the same track). Regulation needs to ensure sufficient investment in infrastructure and rolling stock. Short franchise periods do not ensure adequate incentives to invest and some TOCs have been engaged in franchise renegotiation in order to encourage new investment. The government has recently proposed the creation of a Strategic Rail Authority to promote and oversee the activities of the rail industry.²⁷

Section 5: Conclusions

Both Oulton (1995, p.59) and Crafts (1998, p.29) cite privatisation as an important component of the improvement of the supply side of the UK economy which they observe since 1979. In that narrow sense privatisation has contributed to the improved macroeconomic performance of the UK economy noted over the period.

An economic assessment of the effects of the deregulation and privatisation of public enterprises in the UK would focus on five groups within society and how privatisation has affected them: consumers, shareholders, workers, the government and competitor firms. We conclude that privatisation has generally improved consumer welfare via a combination of higher quality and quantity of output and lower prices. The improving technology of regulation has undoubtedly facilitated this. Shareholders have benefited via windfall gains. Workers do not seem to have got lower salaries as a result of privatisation if they remained with the company while those who left were re-employed elsewhere in the economy (unemployment fell from 1986) or went to early retirement. The government gained large asset sales and increased profits taxes. Competitor firms gained almost by definition in all but a few industries as entry barriers were removed.

The lessons from UK privatisation are contained in the detail of the previous sections. They have resulted in a long list of current debates in the regulation and market structure of privatised industries and a substantial list of improvements that could have made in the process of privatisation in order to deliver even bigger benefits from privatisation.

²⁶ See OPRAF (1998b).

Finally, it is interesting to return to the benefits of privatisation suggested by Marsh (1991) and Moore (1992) in order to evaluate the success of the programme in its own terms and raise caveats about the extent of that success.

1. *Reduced government involvement in industry.* While privatisation has seen reduced government ownership of industry, the need for regulation via regulatory bodies such as OFTEL (Office of Telecommunications) ensures continuing government involvement in industry.
2. *Increased efficiency.* Privatisation and regulation have secured efficiency gains via a combination of market incentives and tough regulation. However if RPI-X regulation evolves into rate of return regulation over time there may be inefficiencies which result from privatisation.
3. *Reduced public sector borrowing requirement.* This has undoubtedly happened in the short run via asset sales, higher corporation tax and debt repayment. If these efficiency improvements could have been secured in the public sector even larger revenue streams (measured in net present value) might still be available to the government. There is also little doubt that the government did not get as high a price for its assets as was subsequently justified.
4. *Curbing public sector union power.* It is not clear the extent to which privatisation, apart from the government's other policies to reduce trade union power, contributed to the 'improvement' in industrial relations noted by Oulton (1995).
5. *Wider share ownership and employee share ownership.* Privatisation has increased the number of small shareholders but the economic significance of this is surely negligible.
6. *Gaining political advantage.* Perhaps this is the most significant aspect of the UK privatisation programme - the fact that privatisation was the most sustained and consistent policy of the 1979-97 Conservative administration. It undoubtedly gained advantage for those in favour of a free market approach to competition but was ultimately so intellectually successful that all political parties have at least acquiesced to it.

²⁷ See DETR (1998).

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Table 1
Privatisations via Public Offer of Shares, 1979-96

	<i>Date of Offer</i>	<i>% sold</i>	<i>Govt £m</i>
British Petroleum	October 1979	5.2	290
	September 1983	7.2	566
	November 1987	36.8	5370
British Aerospace	February 1981	51.6	50
	May 1985	59.0	363
Cable & Wireless	October 1981	49.4	189
	December 1983	22.3	275
	December 1985	31.1	602
Britoil	November 1982	51.0	641
	August 1985	49.0	449
Amersham International	February 1982	100.0	65
Associated British Port Holdings	February 1983	51.5	-34
	April 1984	48.5	52
Enterprise Oil	July 1984	100.0	392
Jaguar	August 1984	100.0	0
British Telecommunications	December 1984	50.2	2626
	December 1991	25.9	5240
	July 1993	20.7	5335
British Gas	December 1986	96.6	7720
British Airways	February 1987	97.5	900
Rolls-Royce	May 1987	96.7	1080
BAA	July 1987	95.6	1281
British Steel	December 1988	100.0	2425
Anglian Water	December 1989	98.4	768
Northumbrian Water	December 1989	98.4	34
North West Water	December 1989	98.4	524
Severn Trent	December 1989	98.4	488
Southern Water	December 1989	98.4	347
South West Water	December 1989	97.4	27
Thames Water	December 1989	97.4	934
Welsh Water	December 1989	98.4	70
Wessex Water	December 1989	98.4	165
Yorkshire Water	December 1989	97.8	383
Eastern Electricity	December 1990	97.6	647
East Midlands Electricity	December 1990	97.5	523
London Electricity	December 1990	97.5	523
Manweb	December 1990	97.5	285
Midlands Electricity	December 1990	97.7	502
Northern Electric	December 1990	97.5	295
NORWEB	December 1990	98.4	414
SEEBOARD	December 1990	97.5	305
Southern Electric	December 1990	97.5	647

South Wales Electricity	December 1990	97.5	243
South Western Electricity	December 1990	97.0	295
Yorkshire Electricity	December 1990	97.5	497
<i>Regional Electricity</i>	December 1990	–	7907
National Power	March 1991	60.9	a
	March 1995	38.3	a
PowerGen	March 1991	59.5	a
	March 1995	36.6	a
<i>National Power/PowerGen</i>	March 1991	–	2954
<i>National Power/PowerGen</i>	March 1995	–	3594
Scottish Hydro-Electric	June 1991	96.6	a
Scottish Power	June 1991	96.4	a
<i>Scottish Hydro-Electric/Power</i>	June 1991	–	3481
Northern Ireland Electricity	June 1993	96.5	362
Railtrack	May 1996	98.0	1950
British Energy	July 1996	87.8	2108

TOTAL			61 973

Adapted from: Curwen, P. and Hartley, K. (1997) and Price Waterhouse (1990).

Includes debt repayment in case of Britoil (1982).

Net of extinguishing debt prior to sale in case of Associated British Ports (1983) and BT (1984).

Includes debt issue in case of British Gas, Anglian Water, Thames Water, Regional Electricity, National Power/PowerGen (1991), Scottish Hydro-Electric/Power and British Energy.

a=Breakdowns not provided.

Table 2
RPI – X Regulation

	<i>British Telecom</i> ¹	<i>British Gas</i>	<i>British Airports Authority</i> ²	<i>Water Supply Companies</i>	<i>Electricity Transmission (NGC)</i>	<i>Electricity Distribution (RECs)</i> ³	<i>Railtrack</i> ⁴	<i>Train Operating Companies</i> ⁵
<i>Regulated</i>	Inland calls International calls (From 1991) Line rentals Leased Lines	Supply to small users Transportation and storage of gas (from 1994) ⁶	Airport charges at south-east airports	Water and sewerage charges Trade effluent Infrastructure charge	All transmission	All distribution	All access to track, stations and light maintenance depots	‘Saver’ ⁷ , ‘Weekly Season’ and most commuter fares around London, Edinburgh, Manchester and Cardiff
<i>Unregulated</i>	Apparatus supply Mobile services VANS	Supply to larger users	All other services (retail, parking etc.)	All other activities (but Ofwat monitors diversification)		Extra high voltage distribution, contracting	Non-rail property income	Apex and discount fares
<i>Price index</i>	Tariff basket based on that of smallest 80% of	Average revenue per therm	Average revenue per passenger	Tariff basket (modified)	Average revenue per KWh	Average revenue per KWh	Fixed track access charge for service, station long	Individual fare

¹ See OFTEL (1996).

² See MMC (1996b).

³ Electricity supply business regulation is being phased out with the coming of full competition in electricity supply (see McDaniel, this volume).

⁴ See ORR (1997).

⁵ See Bradshaw (1998).

⁶ Updated from CRI (1996) *The UK Regulated Industries: Financial Facts 1994/95*: Appendix B.2.

	residential users						term charge	
<i>X (or K) values</i>	X = 3 (1984-89) X = 4.5 (1989-91) X = 6.25 (1991-93) X = 7.5 (1993-97) X = 4.5 (1997-2001) ⁸	X = 2 (1987-92) X = 5 (1992-94) X = 4 (1994-97) X = 5 (1994-97) for transportation ⁹ X = 2 (1997-) ¹⁰	X = 1 (1987-92) X = 8, 8, 4, 1, 1 (1992-97) X=3 (Heathrow and Gatwick) (1997-2002) X=-1 (Stansted, 1997-2002)	K varies by firm over 1995-2000 the range is +4 to -2 ¹¹	X = 0 (1990-93) X = 3 (1993-97) X = 4 (1997-2001) ¹²	Each REC has its X : range is from RPI + 0 to RPI + 2.5	X = 8 (1995/6) X = 2 (1996/7-2000/1)	X=0 (1996-98) X=1 (1999-2002) In commuter markets: X=-2 to 2 depending on quality improvements
<i>Price structure</i>	Initially sub-price caps on line rental and median user bill	X = 0 cap on fixed charge for <5K therms					91%=fixed charge 9%=variable charge	
<i>Cost pass-through</i>		All gas supply costs (1987-92) GPI – 1 (1992 -) energy efficiency factor	75% of extra security costs (1987-92) 95% of extra security costs (1992-)	Cost of new environmental and quality regulations			Traction electricity charge	
<i>Quality Regulation</i>	Fixed compensation for delays in repairs and connections. Contractual	Compensation scheme		EC and UK standards for drinking water and bathing beaches Levels of		Fixed penalties for performance failures (capacity element in	Fines for failure to meet targets on delays and cancellations and on	Fines for failure to meet performance targets plus rewards for

⁸ Updated from Martin & Parker (1997).

⁹ CRI, op. cit. Appendix B.2.

¹⁰ From the MMC report published in June, 1997.

¹¹ CRI (1996), Appendix B.4 contains data on K factors in water companies.

¹² Updated from the web-site of Offer: www.open.gov.uk/offer/offerhm.htm.

¹³ There are three main incentive schemes: the Punctuality Incentive Payment (PIP) which sets fines for delays and cancellations but

	liability			service monitored Compensation scheme		pool price promotes supply security)	improvement of network (stewardship objectives)	achievements ¹³
<i>Regulatory Lag</i>	Initially 5 years Now 4 years Next review 2001	5 years	5 years Next review 2002 MMC involved	10 years (2000) 5 years at Ofwat's or firm's request Next review 2000	Initially 3 years Now 4 years Next review 2001	5 years Next review 2000 ¹⁴	Initially 6 years, Next review will be for 5 years	Initially 7 years, Next review 2003

Adapted from Armstrong, Cowan and Vickers (1994), pp.176-177.

Table 3
MMC Investigations in Gas, Electricity, Water, Telecoms, Airports and Airlines
1980-1997

<i>Company</i>	<i>Date of reporting¹⁵</i>	<i>Reason for reference</i>	<i>MMC recommendation¹⁶</i>
<i>Central Electricity Generating Board</i>	20 May 1981	An investigation into the efficiency and costs of the CEGB's system for the generation and supply of electricity in bulk.	MMC made recommendations intended to enhance efficiency, esp. investment in nuclear power.
<i>Severn-Trent Water Authority, East Worcestershire Waterworks Company and the South Staffordshire Waterworks Company</i>	9 June 1981	An investigation into the efficiency and costs of the STWA, and in relation to the supply of water, of the two waterworks companies.	MMC made recommendations on manpower, investment, budget-setting and internal organisation.
<i>Anglian Water Authority and North West Water Authority</i>	8 November 1982	An investigation into the efficiency and costs of the sewerage functions of the two Authorities.	MMC made recommendations on internal organisation, capital prioritising and strategic planning.
<i>London Electricity Board</i>	3 March 1983	The DGFT believed that the LEB was engaged in anti-competitive practices in its business of domestic electrical goods, spare parts and ancillary goods.	MMC concluded that LEB has been pursuing an anti competitive practice by the cross-subsidisation of its domestic goods business out of the profits made from electricity supply; however, other electricity boards also pursue this practice.
<i>Yorkshire Electricity Board</i>	7 August 1983	An investigation into the efficiency and costs of the Board.	MMC made recommendations on YEB strategy, objectives and management structure.
<i>Civil Aviation Authority</i>	9 October 1983	An investigation into the efficiency and costs of the supplying by the CAA of navigation and air traffic control services to civil aircraft.	MMC made recommendations on financial control, investment, strategy and project management.
<i>South Wales Electricity Board</i>	29 February 1984	An investigation into the efficiency and costs of the Board.	SWALEB's charges were found to be high relative to other Boards, and efficiency-enhancing recommendations were made.
<i>Yorkshire Water Authority</i>	5 December 1984	An investigation into the efficiency and costs of, and the service provided by the YWA.	MMC made recommendations on internal processes, management structure and manpower issues.
<i>Four Area Electricity Boards</i>	30 January 1985	An investigation into the efficiency of revenue collection by East Midlands, South Eastern, North Eastern and South Western.	Recommendations made but none of the four found to be pursuing a course of action which operates against the public interest.
<i>North of Scotland Hydro-Electric Board</i>	2 October 1985	An investigation into the efficiency and costs of the Board.	There was substantial scope for improvement in the setting of objectives, the use of information, and in the co-ordination of central and local planning processes.
<i>British Airports Authority</i>	10 October 1985	An investigation into the efficiency and costs of, and the service provided by BAA in its commercial activities.	MMC made recommendations intended to increase competition in airport terminals, and to improve efficiency in other areas.
<i>British Telecommunications plc</i>	27 January 1986	An investigation of the proposed merger between BT and Mitel Corporation.	The merger was approved, subject to conditions requiring BT to keep its UK business separate from that of Mitel.
<i>Southern Water Authority, The Eastbourne Waterworks Company, Folkestone and District Water Company, Mid-Sussex Water Company, Portsmouth Water Company and West Kent Water Company</i>	16 April 1986	An investigation into the efficiency and costs of, and the service provided by the Authority and the companies in the supply and distribution of water.	Recommendations intended to enhance efficiency were made to the SWA and the companies.
<i>South of Scotland Electricity Board</i>	20 August 1986	An investigation into the efficiency and costs of the Board.	Made recommendations regarding management structure, efficiency audits, objectives and fuel inputs.

¹⁵ The date given is the date of the report's publication, not the date of referral to the MMC.

¹⁶ The 'result' is the recommendation of the MMC, which may differ from the events that actually ensued.

<i>CEGB</i>	25 June 1987	An investigation into the efficiency and costs of the EGB's system for the transmission of electricity in bulk.	MMC made recommendations on financial controls, monitoring of managerial performance, and other issues, e.g. investment and budgets.
<i>British Airways plc</i>	11 November 1987	An investigation of the proposed merger between BA and British Caledonian – was referred to the MMC on grounds of reduced competition and market dominance.	MMC approved the merger, since BA had agreed to give up 5000 landing slots at Gatwick, B.Cal's base, and to surrender several of B.Cal's European routes.
<i>Manchester Airport</i>	22 December 1987	An investigation into the allowed price regulation of MA and whether MA was acting against public interest.	RPI-1 recommended for five years.
<i>Welsh Water Authority</i>	18 May 1988	An investigation of the WWA's efficiency, costs and service.	MMC concluded that WWA would be able to achieve its cost reduction targets by March 1990.
<i>British Gas</i>	19 October 1988	BG was referred to the MMC due to alleged price discrimination in the unregulated contract market.	MMC concluded that monopoly power was present, and was being abused. Recommendations included the publication of non-negotiable price schedules in the contract market.
<i>General Utilities plc, The Colne Valley Water Company and Rickmansworth Water Company.</i>	27 April 1990	An investigation of the proposed merger between the three companies; GU (owned by the French company CGE) controlled The Lee Valley Water Company – the proposed merger was referred to the MMC, since the combined company would cover a significant amount of north-west London.	MMC found that the merger was against the public interest, since it would reduce the scope for yardstick competition; however, it could be allowed if the claimed gains from merger were passed back to consumers as lower prices.
<i>General Utilities plc and the Mid Kent Water Company</i>	4 July 1990	An investigation of the merger situation.	MMC recommended that the number of comparators for yardstick competition be maintained by not allowing CGE to have board representation at Mid Kent Water.
<i>Southern Water plc and Mid-Sussex Water Company</i>	4 July 1990	An investigation of the merger situation	MMC concluded that the merger was not against the public interest, since the MidSussex Water Company was already controlled by the French firm SAUR.
<i>CAA</i>	18 July 1990	An investigation into the supply of navigation and air traffic control services to civil aircraft.	MMC made recommendations for improving strategic and manpower planning, the management of investment and operating efficiency.
<i>BA and Sabena SA</i>	25 July 1990	BA and KLM entered into an agreement in which they would each invest about £35m in Sabena World Airlines, a subsidiary of Sabena SA. The arrangement aimed to develop a hub and spoke operation at Brussels.	MMC concluded that the arrangements were not against the public interest.
<i>BAA</i>	9 July 1991	An investigation into the allowed price regulation of BAA and whether BAA was acting against public interest.	Price control equal to RPI-8 for first two years, then RPI-4 in third year and RPI-1 in years 4 and 5.
<i>Manchester Airport</i>	9 July 1992	An investigation into the allowed price regulation of MA and whether MA was acting against public interest.	MMC recommends RPI-3 for 1993-98 period.
<i>British Gas</i>	17 August 1993 and 6 September 1993	BG requests reference to MMC of whole business.	MMC recommends breakup of BG into supply and transportation businesses, complete abolition of supply monopoly, lower rate of return on transportation and storage assets and relaxation of X from 5 to 4 for small customers from 1994.
<i>Scottish Hydro-Electric plc.</i>	15 June 1995	DGES makes reference after SHE rejects proposals on pricing.	MMC found against company and recommended price reductions, though not as much as regulator.
<i>Portsmouth Water plc</i>	28 July 1995	The DGWS referred the determination of the adjustment (K) factor and the standard infrastructure charge to the MMC.	MMC set an adjustment factor of -1.5 for 1995-2000, and of -0.5 for 2000-2005. Also determined infrastructure charge of £200.
<i>South West Water plc</i>	28 July 1995	The DGWS referred the determination of the adjustment (K) factor and the standard infrastructure charge to the MMC.	MMC set an adjustment factor of +1.0 for 1995-2000, and of 0.0 for 2000-2005. Also determined infrastructure charge of £200.

<i>BT</i>	14 December 1995	After BT failed to reach agreement with Videotron on the financial terms of telephone portability, Ofel referred the issue to the MMC.	MMC concluded that the lack of portability was against the public interest; its negative effects could be remedied by modifications to BT's licence.
<i>Belfast International Airport Ltd. And Belfast City Airport Ltd.</i>	9 January 1996	Investigation of the proposed merger between the two airports; referred to the MMC by the DTI .	MMC concluded that the potential benefits from the merger are outweighed by the detrimental effects on competition and choice; the MMC recommended that the merger be prohibited.
<i>PowerGen plc and Midlands Electricity plc</i>	25 April 1996	Investigation of the proposed merger referred to the MMC on grounds of vertical integration between a generator and REC.	MMC concluded that the merger was acceptable, provided certain conditions are met. One member of the inquiry group dissented with the conclusions.
<i>National Power plc and Southern Electric plc</i>	25 April 1996	As PowerGen – Midlands report.	As PowerGen – Midlands report.
<i>BAA</i>	16 July 1996	An investigation into the allowed price regulation of BAA's London airports and whether BAA was acting against public interest.	MMC recommends RPI-3 for 1997-2002 at Heathrow and Gatwick, RPI+1 at Stansted. Some of BAA's action ruled to be against public interest.
<i>Severn Trent plc and South West Water plc</i>	25 October 1996	An investigation of the proposed merger between two WSCs.	MMC recommended that the merger be prohibited on the grounds that it would result in the loss of SWWS as a comparator.
<i>Wessex Water plc and South West Water plc</i>	25 October 1996	As Severn Trent– SW Water report.	As Severn Trent– SW Water report.
<i>Mid Kent Holdings plc and General Utilities plc and SAUR Water Services plc</i>	21 January 1997	An investigation of the proposed merger- GU and SAUR had launched a hostile joint bid for MKH, a small water only company.	MMC concluded that the potential efficiency gains through the merger are small, whereas the loss of comparative competition are large; it recommended that the merger be prohibited.
<i>British Gas plc</i>	18 June 1997	BG was referred to the MMC after a dispute with the DGWS concerning the price cap for BG Transco's transportation and storage services.	MMC's conclusions broadly supported the DGWS; a price cap of RPI– 2 was imposed.
<i>NI Electricity</i>	25 April 1997	Reference made by DGES for NI after NIE rejected price control proposals.	MMC recommends price reductions less than DGES NI had wanted by greater than those sought by NIE.
<i>Manchester Airport</i>	19 August 1997	Investigation into appropriate economic regulation of charges.	RPI-6.5 in 1998-99, with RPI-5 for subsequent 4 years and found that process of consultation inadequate.
<i>Pacificorp and The Energy Group plc</i>	19 December 1997	The Secretary of State for Trade and Industry referred the proposed merger between these two companies on the grounds of foreign ownership of a REC.	The MMC concluded that the merger is not expected to act against the public interest.

Table 4

Multi-firm studies of the effects of privatisation in the UK.

<i>Study</i>	<i>Objective</i>	<i>Method</i>	<i>Data</i>	<i>Results</i>
<i>Hutchinson (1991)</i>	To test whether private firms are more efficient than government owned firms and whether change of government in 1979 had a positive effect on corporate performance.	Descriptive statistics and OLS analysis of labour productivity, profitability, technology mix.	17 UK firms, 1970-86, including 6 privatised firms in competitive industries.	Private firms more efficient than public firms, but public outperform over period, weak evidence for government effect but no clear ownership effect.
<i>Bishop and Thompson (1992)</i>	To test the extent to which the efficiency improvements are being achieved through privatisation in the UK.	Output, labour productivity and total factor productivity growth rates.	9 UK public enterprises 1970-90.	Average labour and total factor productivity growth increases for the sample between 1970-80 and 1980-90 periods.
<i>Haskel and Szymanski (1992)</i>	To test four hypotheses concerning the effect of ownership and competition on efficiency in the UK.	Labour Productivity growth regressions.	1972-1988 data on 12 UK initially public companies restructured or privatised during period.	Competition increases productivity, changes in ownership, management and regulation have slight impact. Productivity improvement due to labour shedding.
<i>Bishop and Green (1995)</i>	To examine how well privatised companies did in the recession period 1990-94.	Profit, turnover, wages and employment data.	9 companies 1979-1994, including BT, British Gas and BAA. TFP growth comparison 1990-94 for these 3 regulated companies and British Coal, British Gas and BT.	Firms in competitive industries do better than those in regulated industries. TFP comparison reveals no better performance in private than public sector.
<i>Koedijk and Kremers (1996)</i>	To estimate the effect of the degree of product market and labour market regulation on real output growth.	Regression of real output growth in market sector per capita on measures of degree of regulation.	Data on 11 EU countries for the period 1981-93.	Change in public ownership rank variable from 7 to 1 in UK would increase growth by 0.16%p.a. relative to other countries. Overall product market deregulation may raise UK growth by 0.6%p.a.*
<i>Parker and Martin (1997)</i>	To estimate the significance of the performance impact of privatisation.	Labour productivity, total factor productivity, growth of value-added per employee and rate of profit.	11 privatised organisations over 1973-95 period.	No overall improvement in productivity growth as a result of privatisation. Degree of competition clearly explains differential effect of privatisation.

For further sources see Parker and Martin (1997, pp.85-86). * See Crafts (1998, p.29).