

# *The Restructuring and Privatisation of the Electricity Distribution and Supply Businesses in England and Wales: A Social Cost Benefit Analysis.<sup>1</sup>*

*Preetum Domah  
Queens' College  
University of Cambridge  
CB3 9ET, UK  
E-mail: pd200@hermes.cam.ac.uk*

*and*

*Michael G. Pollitt  
Judge Institute of Management Studies  
University of Cambridge  
CB2 1AG, UK  
E-mail: m.pollitt@jims.cam.ac.uk*

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## **1. Introduction<sup>2</sup>**

The electricity supply industry (ESI) in the United Kingdom can be broadly separated into generation, transmission, distribution and supply. Prior to privatisation in England and Wales (E&W), the Central Electricity Generating Board (CEGB) was responsible for generation and transmission, and the 12 regional electricity Area Boards (ABs) for distribution and supply.

At privatisation the 12 Regional Electricity Companies (RECs) replaced the 12 ABs. Transmission became the responsibility of the National Grid Company (NGC), a company fully owned by the RECs. Distribution and supply were uncoupled to some extent, as a REC can supply electricity outside its franchise area on a payment of a charge for distribution over another REC's network.

Each REC owns and operates the electricity distribution network in its authorised area.

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The distribution systems consist of overhead lines, cables, switchgear, transformers, control systems and meters to enable the transfer of electricity from the transmission system to customers' premises. Supply businesses are engaged in the bulk purchase of electricity and its sale to customers. Compared to the supply business of, basically, metering and billing, the distribution business is highly capital-intensive.

The distribution of electricity is an important business activity of the RECs and typically contributes the majority of their operating cash flow and profits. In 1998 distribution and supply charges accounted for approximately 32% and 13%, respectively, of a domestic customer's bill, and distribution has a significant influence on the overall quality of supply to customers. Analysing the impact of changes in ownership and the regulatory framework makes economic sense owing to the potentially large influence that electricity distribution may have on final prices, and the distribution of gains of losses from these changes.

At the time of restructuring, the Government put in place initial price controls on the distribution businesses for a period of five years (1990-1 to 1994-5), which typically allowed for increases in total distribution charges in real terms. Over the period of these initial controls RECs increased their profits significantly, which were soon to become a major source of controversy, as it became apparent that the initial price caps that were set by the Department of Energy were somewhat 'too' generous to the companies. The most important review was in August 1994 when OFFER (the Office of Electricity Regulation) announced reductions averaging 14% in final electricity prices to take effect in April 1995.

By 1994 the majority of customers had seen no price benefit from the privatisation (Henney, 1994). Tariff customers effectively financed the privatisation, while the large customers lost the benefit of their special agreements. Only the medium-sized 1-5MW (megawatt) customers had benefited because they avoided having to subsidise British Coal. Additionally, domestic prices of electricity initially increased, relative to industrial prices, by about 5% more than expected, with the increase being

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<sup>2</sup> A glossary of terms is provided at the end of our main conclusions.

concentrated in the early years of privatisation and restructuring (Yarrow, 1992). Newbery and Pollitt (1997) found that taxpayers and shareholders were the beneficiaries of the restructuring and privatisation (R&P) of the CEGB. They, however, cautioned on using this result to judge the whole privatisation of the ESI until the distribution business itself is analysed.

Pollitt performed a social cost benefit analysis (SCBA) for the Northern Ireland ESI (1997b) and the Scottish ESI (1999) along the lines of Newbery and Pollitt (1997) and Jones et al. (1994). Green and McDaniel (1998) also used a SCBA framework to analyse the impact of competition on the ESI in E&W. This paper seeks to review the performance of the regulated supply and distribution businesses of the RECs in the E&W ESI since privatisation and evaluates the gains (or losses) from R&P. It also assesses the distribution of these gains (or losses) to consumers, producers and the government. A SCBA approach is used to achieve these objectives. The paper is in 7 sections. Section 2 reviews the theoretical perspectives on R&P and provides some empirical basis to the arguments. Section 3 sets out the historical background. Section 4 discusses the SCBA methodology. Section 5 details the data used for the SCBA. Section 6 contains the results and Section 7 concludes.

## **2. Theoretical Background and Empirical Work**

The ideological beliefs underlying restructuring of the ESI in E&W were that private ownership and the profit motive gave far better incentives than the most benevolent kind of state control (let alone the state interference which seemed to be the best that British governments could achieve), and that competitive private industries gave better results than monopolies (Green, 1998). Efficiency gains following cost reductions, depending on the severity of competition and the quality of regulatory framework in place, are assumed to benefit consumers through price reductions and improvements in the quality of service.

The privatisation of utilities is a complex affair, often involving three separate, not necessarily connected elements. The first is clearly a shift in ownership from the state

to private hands. The second is a corporate restructuring leading to the creation of new or radically re-shaped companies. The third is a change in procedures by which the sector operates, usually involving an injection of competitive procedures (Thomas, 1996). New regulatory policies, standards and practices often accompany these changes. Depending on the combination of these factors, liberalisation (R&P) will tend to cause significant changes in the way businesses are conducted. Pollitt (1997a) identifies five theoretical arguments relating to the efficiency effects of liberalisation. First, liberalisation can improve incentives by reallocating property rights from public to private sector (Alchian, 1965). Second, liberalisation may change the objective functions of managers being faced with private sector initiatives (following Niskanen, 1968). Third, there may be rent-seeking on the part of firms faced with some type of regulation (like the rate of return regulation) shifting these firms away from the efficiency frontier (following Averch and Johnson, 1962). Fourth, liberalisation may cause influence activities within the industry (such as empire building) which may cause a divergence from efficiency (Milgrom and Roberts, 1990). Fifth, theories of policy commitment suggest that the government can effectively reduce interventions and the costs that accompany these interventions (such as in Willig, 1994).

E&W is a developed market economy, with an electricity sector that has developed strong linkages with the rest of the economy. This means that the theoretical predictions weakly argue for R&P in the case of property rights, bureaucracy and commitment theories; and is uncertain about the sign and magnitude of changes when it comes to incentives under regulation and influence activities. Poorly constructed incentive regulation could negate all positive effects from other sources. The results of any individual R&P process in a given industry and in a given country have the potential to be highly variable (Pollitt, 1999).

There are two broad methods to analyse the impact of liberalisation (Pollitt, 1997a). One deals with assessing the impact from actual occurrences. The other tries to predict or simulate the potential impact based on some historic trends. Any overall evaluation of the efficiency effects of privatisation and restructuring will need to take into account a wide range of impacts. The methodologies used to assess the impact of liberalisation based on price or cost comparisons, such as Yarrow (1992) and Bishop and Thompson

(1992); using simulation or frontier methodologies, such as Burns and Weyman-Jones (1994), have been subjected to a uniform and strong criticism: that they do not attempt to directly address the issue of whether liberalisation is likely to be socially beneficial. None consider the distributional consequences of liberalisation and most neglect the environmental costs of liberalisation. A more comprehensive approach would be a Computational General Equilibrium Approach (CGE) such as the one used by Chisari et al. (1999), where the macroeconomic and distributional impacts of privatisation and regulation are assessed. Nevertheless, they do not possess the power of an overall social-cost-benefit analysis that we discuss below, and are themselves based on numerous assumptions as to specification of objectives and constraints.

SCBA studies such as Galal et al. (1994) and others (Green and McDaniel, 1998; Newbery and Pollitt, 1997; Pollitt 1997b; and Pollitt, 1999) have addressed the failures of the other methodologies. In this study, we use a SCBA framework to analyse the effect of liberalising the RECs' regulated first-tier<sup>3</sup> supply and distribution businesses in E&W. The method is discussed in Section 4 below.

### **3. Historical Background**

#### ***3.1 Public Ownership***

The electricity supply industry (ESI) had been in public ownership since 1948. In England and Wales (E&W), the Central Electricity Generating Board (CEGB) was responsible for generation and transmission; it sold electricity to twelve Area Boards (ABs) under the terms of the Bulk Supply Tariff, based upon its marginal costs. The ABs were responsible for distribution and selling electricity to consumers. In Scotland there were two vertically integrated Boards, while in Northern Ireland the NIE was responsible for the small vertically integrated, largely isolated, system in that province (Green, 1996).

During the course of 1982 the government's ultimate intention to introduce legislation

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<sup>3</sup> The first-tier supply business of the RECs is the supply of electricity within their own franchise area.

to allow private companies to set up to provide electricity to consumers became clear (Electricity Consumers' Council, 1982).

### ***3.2 Privatisation and Restructuring (R&P)***

Privatisation of the ABs took place in stages. The White Paper 'Privatising Electricity' in which the Government laid out its plans for the industry was published in February 1988, followed by the Electricity Bill in November of the same year. Vesting day, when the transfer of the property of the ABs to the newly established RECs took place, was 31 March 1990. The RECs (with their share of NGC) were sold to the public in December 1990.

The R&P in different regional markets varied. In Northern Ireland the smallness of the system has limited the options for R&P (Pollitt, 1997b). In Scotland, the assets of the two vertically integrated electricity boards were vested in three new companies. There has been a possibility to disintegrate the industry as compared to Northern Ireland and this is now under active consideration. Tables 6, 7 and 8 summarise some of the facts relating to the R&P of the ESI in the UK. We present these tables to understand the significance of the RECs in the programme of R&P in the UK, and also set the base for analysing the contributions that distribution and supply make to explaining overall prices and cost changes within the industry.

### ***3.3. Importance of the RECs***

The 12 ABs who between them served 22.2 million customers in 1989, ranged in size from South Wales (Customers: 0.91m; Sales: 11.5 TWh; Maximum Demand: 2,111 MW) to Eastern Board (Customers: 2.86m; Sales: 27.2 TWh; Maximum Demand: 5665 MW) (Henney, 1994). The size of the turnover of the RECs (distribution and supply activities) was about £3.8bn by 1997-8 (at 1995 prices), representing about 30% of total turnover of the ESI in the UK.

### ***3.4. Immediate Concerns after R&P***

In earlier years there had been public concerns about profits and prices; later more concerns were expressed with regard to increased dividends and the ability of distribution companies to finance share buybacks<sup>4</sup>, and about the high prices which bidders have been willing to pay to acquire RECs.

From 1994/95 to 1998-9, average distribution charges have fallen by about 25 per cent in real terms (see Figure 2 for the path of controllable costs), and average electricity prices to domestic customers by about 15 per cent in real terms. An account of these price changes can be found in Green (1998).

### ***3.5. Price Controls and Reviews***

Each REC's distribution business constitutes an effective regional monopoly. In order to protect customers from the potential abuse of monopoly power, each distribution business is subject to controls on the prices it can charge and the quality of service it must provide (OFFER, 1999). Supply businesses, on the other hand, have been progressively liberalised, and with increasing degrees of competition, regulation has become less significant. Large customers were given the freedom to switch suppliers in 1990, medium customers from 1994 and all domestic customers from 1998.

The final price of electricity consists of a number of components. While transmission, supply and generation price components fell during the second Price Control Review, the distribution component of prices increased since privatisation. The initial distribution price controls on the RECs put in place by the Government at Vesting in 1990 permitted price increases ranging up to 2.5% above inflation rate (OFFER, 1994).

OFFER started operation on 1 September 1989, five months after the first price

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<sup>4</sup> Henney (1997) gives a clear indication on this concern relating to the RECs. He also explains the other regulatory problems surrounding the electricity sector during the early years of R&P, especially relating to the distribution businesses.

controls on the RECs became into force. Henney (1997) explains the rise in prices and profits after privatisation as a regulatory failure, in terms of the lax setting of the initial price control for wires. Also, the government could not substantiate the claims for potential productivity gains at the time of vesting, although we record a unit productivity growth of 2% per annum from 1970 to 1987. The regulatory failure reflected itself into an initial price rise that was well above the inflation rate. We note that during the period 1981-82 to 1988-9, electricity prices in E&W rose at less than the rate of inflation and the two diverged over time.

OFFER introduced revised distribution price controls for England and Wales in 1995, which required cuts in real terms of 11 to 17 per cent in distribution charges in 1995/96 and further reductions in real terms of between 10 and 13 per cent in 1996/97. Thereafter, distribution charges were required to fall by 3 per cent per year in real terms for the duration of the price control (until March 2000). These price controls were then modified in 1998 to allow RECs to make certain additional charges for services to facilitate competition in supply. These distribution price controls have been revised from 1 April 2000. Based on Ofgem's predictions of costs and revenues, the RECs will be faced with price controls on distribution businesses averaging 3% for the next five years, with an initial cut in PESSs' distribution revenue by about 23.4% (see Ofgem, 1999b). Controllable costs for the RECs are projected to fall by 2.3% per annum over the period 1998 to 2005.

Price controls on the REC's supply business limited average revenue to rise by no more than inflation, during the period 1990-1 to 1994-5 and then regulation was tightened to RPI-2 for the supply business of all the RECs until March 1998. In April 1998 further revised controls set real reductions in prices between around 3 and 12 per cent followed by a real reduction of 3% in 1999. Price controls to apply in 2000-2002 have been set on standard domestic and Economy-7 customers with price reductions of 5.7% p.a. and 2.1% respectively, on the final prices. It is expected that controls will no longer be necessary after this period following the expected degree of competition in supply (although a revision is planned after these two years).



### *3.6. New Developments*

After the demerger of the NGC from the RECs in 1995 many changes occurred within the industry, changing the nature of business of the RECs. The lifting of the 'Golden Share' meant that mergers and acquisitions could take place after 1995. By March 1996, four RECs had been taken over and three others were the subject of take-over bids, including bids from PowerGen and National Power (Green, 1996). A summary of some selected take-over activities that involve the RECs is provided in Appendix 2.

RECs are a more diverse group today than was the case five years ago. Of the twelve RECs in England and Wales, eight (Eastern, East Midlands, London, Midlands, Northern, SEEBOARD, South Western and Yorkshire) were taken over by US electricity companies; two (NORWEB and SWALEC) by UK-based water companies; and one (Manweb) by Scottish Power; and Southern Electric merged with Scottish Hydro. Some have changed ownership a second time (e.g. London Electricity and East Midlands Electricity).

There have also been significant changes in the way that many of the RECs structure their business, and the range of activities in which they are involved. For example, several RECs have developed very active second-tier<sup>5</sup> supply businesses. Eastern now has substantial generation interests, and is in fact one of the largest generators in England and Wales.

Most RECs are now active in the supply of gas as well as electricity. This provides opportunities for joint marketing of the two fuels. Some PESs also have telecommunications licences. Recently, major changes have occurred through the sale of some RECs' (Midlands Electricity, SWALEC, and Western Power Distribution (previously SWEB)) supply businesses. Further sale of the other RECs' supply businesses are expected especially following the proposed Utilities Bill (Ofgem, 1999a). Ofgem is planning to lay tighter restrictions to ensure that each regional monopoly electricity distribution business is held in a separate corporate entity,

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<sup>5</sup> The supply of electricity outside the REC's authorised area.

ringfenced from all other activities carried on within the licensee's group. It is expected that this ringfencing arrangement will protect capital providers as well as consumers. It is also expected that savings from mergers and acquisitions will eventually have to pass over to consumers.

### **3.6. Windfall Taxes**

The UK government imposed taxes on windfall gains of the utilities. In 1997 the amount announced to be raised from such taxes was a total sum of £5.2bn and included 24 utilities (electricity, water and others). Such levies were initially planned in 1992. The large profits of the privatised utilities attracted this new tax.

The electric utilities were to contribute £2.1bn of the £5.2bn. The RECs' share of the £2.1bn amounted to £1.25bn.<sup>6</sup> The Electricity Association, on behalf of the Industry, welcomed the chancellor's confirmation that the windfall tax 'will be a one-off' levy, and that provision could be made to 'pay in two instalments'<sup>7</sup>. Table 8 summarises the amount of windfall tax paid by the electric utilities, on a present value basis and at 1995 prices.

## **4. Methodology: The Social Cost-Benefit Framework**

### **4.1. Preliminaries**

The White Paper, which announced privatisation, clearly stated that the main beneficiaries would be the consumers. Competition would 'create downward pressures on costs and prices, and ensure that the customer ... comes first' (MacKerron and Watson, 1996, p.186). Our main objective is to find out whether consumers benefited from R&P of the RECs in E&W.

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<sup>6</sup> Extracted from: Inside Energy, (1997), 'The lucky few escape Brown's windfall net', *Inside Energy*, vol.8, no.3, 11 July 1997. It should be noted that the NGC and British Energy did not have to pay any windfall tax, because the former was demerged from the RECs (as opposed to being floated in its own right) and the latter realised no profit since it was privatised.

<sup>7</sup> Financial Times, (1997), 'Brown's first budget - windfall tax: two tranche tax is welcomed', *Financial Times*, 3 July 1997. Tax liability for Manweb and Norweb are extracted from this source.

## 4.2. The Methodology

Galal, Jones, Tandon and Vogelsang (GJTV, 1994) identify three main groups in society, viz., consumers, private producers and government. GJTV use their framework to assess whether privatisation is beneficial to the economy as a whole. A full SCBA should, in theory, be able to address the impact on economic efficiency and equity. Our first objective is to answer the question: ‘Does the fall in costs resulting from R&P warrant the cost of R&P?’ Then we shall address the distributional aspect of the problem: ‘Who gained and who lost (if anyone) in the process of R&P?’ The first question considers the productive efficiency impact of R&P while the latter issue relates to equity. We are ignoring the allocative efficiency aspect for simplicity<sup>8</sup>.

The GJTV method looks at costs, prices, profits, taxes, and consumer surplus. For simplicity, we shall follow Newbery and Pollitt (1997), such that

$$\Delta W = V_{sp} - V_{sg} + (\lambda_g - \lambda_p) Z.$$

$V_{sp}$  = social value under private operation

$V_{sg}$  = social value under continued government operation

$\lambda_g$  = shadow multiplier on government revenue

$\lambda_p$  = shadow multiplier on private funds

$Z$  = actual price at which sale is executed

Privatisation will be socially worthwhile if  $\Delta W > 0$ . Assuming that in a developed market economy we would expect no big difference in shadow multipliers, we set  $\lambda_g =$

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<sup>8</sup> The calculation of dead-weight losses (DWL), following a price reduction of about 4% p.a. (based on a 2% counterfactual cost fall in the public sector, and a future reduction in controllable cost at 2.3% p.a.), and a total revenue of £4.6bn p.a. yields a value of £1.7m for an electricity demand elasticity of 0.2; and a value of about £2.6m for an elasticity of 0.3. This calculation is based on the following formula:  $DWL=0.5*\epsilon*\tau^2$  as a proportion of total revenue (where  $\epsilon$  is the electricity demand elasticity and  $\tau$  is the proportional difference between actual and counterfactual per unit revenue). As we can see, these values are essentially negligible.

$\lambda_p = 1$ . The calculation of  $\Delta W$  involves the calculation of the difference in actual and predicted costs under private ownership and a counterfactual cost that we could have under public ownership. We evaluate the cost reductions due to efficiency gains and deduct from it the R&P costs, to arrive at the value of  $\Delta W$ . This  $\Delta W$  will then be allocated to our three groups in order to find out who gained, who lost and by how much?

#### ***4.2.1. Comparing Costs With and Without Privatisation***

To compare the costs with and without R&P, we need to establish proper counterfactual of what would have happened to costs had the industry been left in public hands. Since it is impossible to know exactly what would have happened under public ownership, we construct possible counterfactuals (scenarios). Here we use 4 possible scenarios<sup>9</sup>, 0%, 1%, 2%, 3%, counterfactual cost decline. Another possible counterfactual that we may use is privatisation with a different regulatory framework. The latter is not performed in the present paper.

To arrive at the counterfactual costs, we calculate 3-year moving averages (3-ma) of the controllable costs until 1988-89. We do not use the privatisation year given that they may not be representative of the business-as-usual operation of the industry under public ownership. We project a 3-ma at the various counterfactual cost declines. For example, the 1% counterfactual cost decline per annum will yield a series that takes the 3-ma as the first value and then generates a series at the common multiplying factor of 0.99 on a successive yearly basis.

Similarly, counterfactual operating profit was calculated using a rate of return on the gross value of assets<sup>10</sup> and projected at the rate of return in 1989-90. Although the rate of return was politically fixed during the period before privatisation, it was stable until 1988-9. There is reason to believe that the net rate of return on net assets in 1989-90

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<sup>9</sup> It would be rational at this stage to consider a 2% per annum counterfactual cost fall as the most likely counterfactual given the productivity growth from 1970 to 1987 averaging 2% p.a. We provide more support for a 2% counterfactual cost fall per annum in Section 6.2. We also performed the SCBA using a 5% counterfactual cost fall and the results are only presented in Table 2.

<sup>10</sup> Gross value of assets is used as compared to net assets, given its relative stability over the latter.

(equal to 4.75%) was far above what would have occurred under normal conditions and had the design to make the sector more attractive to investors (Electricity Consumers' Council, 1988). Taxes and counterfactual taxes were calculated by projecting a tax rate. This tax rate was the ratio of tax to operating profit. The change in tax (actual less counterfactual) is calculated by applying the counterfactual tax rate to the calculated counterfactual operating profit. R&P cost figures were also aggregated on a present value basis. All R&P costs were assumed to be zero under public-sector counterfactual (and after 1998 for the RECs, although Ofgem has made allowances for further R&P as a result of the separation of supply and distribution businesses).

The benefits (or losses) to consumers have been calculated from actual and projected counterfactual per unit revenue of the RECs. To project the counterfactual per unit revenue, we compute the sum of counterfactual profit, counterfactual cost, and counterfactual 'other costs'. We, therefore, derived counterfactual per unit revenues for the six counterfactual cost declines.

Once the counterfactual cost declines are calculated it is easy to find the difference between  $C_p$  and  $C_g$  (costs under private sector<sup>11</sup> and government sectors respectively). These differences define cost savings potential following privatisation and these values can be aggregated on a present value basis using some discount rates. We used discount rates varying from as low as 5% to as high as 12%. We note that discount rate of 6% was the Treasury's preferred discount rate in the 1980s, 8% is the current rate and 10% is a typical private sector discount rate (Newbery and Pollitt, 1997).

To distribute the gains in efficiency (cost savings net of R&P costs), we deduct from the cost savings (net of R&P) the change in tax and the benefits (or losses) to consumers, at the appropriate counterfactual cost reduction. The residual<sup>12</sup> represents the benefits (or losses) to producers.

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<sup>11</sup> Note that the costs under private sector (RECs) have incorporated Ofgem's projections of future cost declines from 1998-9 to 2004-5 (see Section 4.4.2 for details).

<sup>12</sup> Green and McDaniel (1998) used a top-down approach. They calculate electricity price changes and then calculate the benefits (or losses) to consumers. We use a bottom-up approach, identifying the cost-driver to the price change and then explain why prices have not fallen as much as costs.

To achieve these objectives, we constructed consolidated accounts of the 12 RECs for the period 1986-7 to 1997-8. For a detailed account of the numbers used and adjustments made for the pre- and post-privatisation periods refer to Appendix 1 and Table 1.

#### ***4.2.2. Incorporating Future Price Control Proposals***

OFFER (the Office of Electricity Regulation) proposed distribution price reductions to the order of 3% from 1997-8 to 1999-00. Further reductions of about 3% p.a., after a one-off cut in PES distribution revenue by 23.4%<sup>13</sup> by March 2001 (equivalent to £509m at 1995 Prices for the RECs), for the period April 2000 to 2005 are proposed by Ofgem. We incorporate this information into our SCBA, by projecting revenue reductions as if they actually occurred. Operating profits are projected on the basis of the difference between projected revenue and projected costs<sup>14</sup>.

#### ***4.2.3. The Efficiency Gains from Privatisation***

The most expected result from R&P is the potential competitive pressure from the product and capital markets and the greater incentives to cut costs (for managerial, incentives or other reasons discussed above). Unfortunately, for the distribution businesses in E&W, competition is not much of an issue. Benefits from R&P would accrue mostly from productive efficiency gains.

The value of efficiency gains from R&P is the present value of  $(C_p - C_g)$  taking into account a demand growth rate of 1.3% per annum (NGC, 1999).

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<sup>13</sup> Ofgem, (1999), 'PESs signal acceptance of price reviews', *Press Release* no. R/63, UK: Office of Gas and Electricity Markets, 21 December 1999.

<sup>14</sup> Costs are projected based on Ofgem's projections of 2.3% fall p.a. over the period 1997-8 to 2004-5. NGC charges were allowed to fall by an average of 2% p.a. based on the latest Ofgem's Transmission Price Control Proposals (Ofgem, 2000).

#### *4.2.4. The Investment Savings*

In 1993, the RECs made forecasts of total capital expenditure of £1.64bn per year for the period 1994-5 to 1999-00. OFFER (1999c) scaled back their forecasts of total capital expenditure made by companies to £1.45bn p.a. Ofgem's (1999b)<sup>15</sup> updated forecast for 1999 and 2000 is £1.25bn per annum.

We incorporate these estimates of the investment savings (the difference between £1.45bn and £1.25bn) into our SCBA. This is achieved by considering that these additional investments of £200m p.a. would have been undertaken under the public sector, and hence inflating the capital expenditure needs of the sector for 1995-6 to 2004-5. We project changes in assets, operating profit and depreciation, and build the counterfactual per unit revenue (as discussed in 4.2.1 above) to incorporate these changes.

#### *4.3. Assumptions*

While there are many similarities between the distribution systems that RECs operate, there are also some differences. For example, companies vary in size (in terms of area or the number of customers or the quantity of electricity distributed), in the degree to which their customers are scattered in rural or concentrated in urban areas, in the extent to which they have larger customers who may take supply at higher voltages rather than requiring to be transformed to a lower voltage, as well as in other ways (OFFER, 1998a). We shall assume that these differences between RECs are not of major significance. These are simplifying assumptions that we need to make for the SCBA, otherwise weights on physical characteristics expressing these differences would have been required to assess the final distribution of gains in efficiency from R&P. A detailed REC-by-REC study would be needed to assess the locational implications of divergences in physical and other characteristics between RECs.

Equal social weights are also assumed. That is, the value of one unit of currency to

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<sup>15</sup> Figures presented here are at 1997-8 prices.

consumers is equal to the value placed on it by either the government or the producer.

Furthermore, the setting up of counterfactual cost reductions for RECs assumes that the rate of fall in cost is constant under each possible scenario, such that a 1% p.a. cost fall counterfactual, implies that costs will fall at 1% p.a. until the end period (2005). Thereafter, any divergences between actual and counterfactual costs are locked.

## **5. Data**

To undertake the SCBA, data on turnover, operating costs, controllable operating costs, taxation, operating profit, dividends, costs of R&P, employment, output, and retail price indices (among others) are required for the whole period 1985-6 to 1997-8. A list of the items is given in Appendix 1. Table 1 shows the data used. The composition of turnover is depicted in Figure 1. Using the actual data on controllable costs, 'other' costs, tax and operating profit, we are able to compute counterfactual values for the public sector.

Operating costs cover the day to day costs of running the network, such as repairs and maintenance, planning and control, overhead costs, NGC exit charges and distribution system business rates.<sup>16</sup> Around one-third of operating costs can be considered to be largely outside the control of the companies (including the NGC exit charges and depreciation). Price controls will have a tendency to reduce the proportion of controllable to total costs. Our objective is to evaluate for the ABs and RECs, the present value associated with the change in controllable costs.

## **6. The Results**

### ***6.1. Efficiency Gains***

Table 2 provides estimates of the discounted efficiency gains of the RECs in E&W. We

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<sup>16</sup> In what follows we consider rates to be a controllable cost. There is no evidence for distribution rates (and rents) to have increased following privatisation.



use a 1.3% demand growth rate.<sup>17</sup> All other assumptions made in section 4.3 are maintained.

With a discount rate of 6%, efficiency gains through cost reduction and investment savings amount to £3.2bn with a counterfactual cost fall of 2% per annum and a future controllable cost fall of 2.3% p.a. This efficiency gain is partly offset by R&P costs (of £1.1bn), yielding efficiency gains net of R&P costs of £2.1bn. Table 2 describes the R&P costs discounted at the different rates. The totals in Tables 4-1 through 4-4 are the efficiency gains net of R&P costs at the different discount rates.

## **6.2. Pro-Public Scenario**

Table 4-4 details the pro-public ownership scenario. This scenario is one with a high expected rate of cost decline in the public sector that beats a private sector cost decline, and also saves on the costs of R&P. With a counterfactual cost decline of 3% p.a. public sector ownership is a more desirable option since an efficiency loss of £1.4bn would have been added to the £1.1bn of R&P costs.

At 1985-6 prices, total costs per unit sold for the RECs rose by 2.3% over the period 1980 to 1986. Added costs (p/kWh) over the same period declined by 3.4% per annum and distribution costs (p/kWh) declined by 1.5%.<sup>18</sup> Staff employed per GWh was on a continuous decline from 0.39 in 1979-80 to 0.33 in 1985-86 and labour productivity growth has been about 2% p.a. between 1970 to 1987. RECs' costs declined at a slower rate over the period 1985-86 to 1988-89 by an average of 0.8% per annum and net controllable costs declined at a rate of 0.3% p.a.

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<sup>17</sup> Note that cost savings are sensitive to changes in the demand growth rate. For instance, at a 2% counterfactual cost fall and using a 6% discount rate, cost savings amount to £2.9bn at 1% demand growth rate; £3.2bn for 1.3% and £3.9bn for a rate of 2% demand growth.

<sup>18</sup> Added cost equals total electricity supply cost less electricity purchase costs less non-CEGB fuel costs less profit from non-electric business. Distribution cost is net of income arising from statutory and other non-profit earning rechargeable work (Refer to Electricity Council's Annual Reports and 'Indicators of Performance' for more details on the definitions and on the figures used here). Note that although total cost per unit may be rising, distribution and added costs have been generally falling. A 2% counterfactual cost fall is not impossible or unlikely, given the experiences of the Scottish ESI (Pollitt, 1999) and Northern Ireland ESI (Pollitt, 1997) indicating these orders of cost reductions during the first few years after RECs' privatisation. And the public sector Nuclear Electric, experienced reduction in operating costs (net of fuel costs and provisions) of 3.2% per annum over the

On the front of electricity prices, by April 1987, they had fallen by 15% in real terms over the previous five years as a result of electricity sales, improved efficiency, and most importantly, significant falls in world fuel prices culminating in a £300m cut in the CEEB's coal bill in 1986-87 (Electricity Council, 1988).

Using these trends in costs and prices until 1988-89, a counterfactual cost fall of 2% p.a. under public ownership would seem achievable. And this yields large losses to consumers following R&P.

### ***6.3. Pro-Privatisation Scenario***

If unit controllable costs were to fall at the rate at which it was falling between 1985-6 to 1988-9, then we would certainly choose a counterfactual of between 0% p.a. to 1% p.a. cost decline for the continued public ownership regime. This would yield high efficiency gains net of R&P costs (at as high a discount rate as 12%) as depicted in Tables 4-1 and 4-2.

At 0% p.a. counterfactual cost fall and with a 6% discount rate, the net benefit of R&P is £13.7bn; at a 1% p.a. counterfactual cost fall, it is £7.3bn. With the labour productivity growth after 1995 as shown in Figure 5 (likely to have been unparalleled by the public sector) and the drastic overall cost reduction after 1996-7, we expect that the benefits of privatisation and restructuring will be maintained at a high level after 1997-8.

Table 4-1 gives a definite case for privatisation and restructuring. Consumers benefit £14.8bn at 6% discount at a counterfactual cost fall of 0% p.a. and £8.4bn at a counterfactual cost decline of 1% p.a. This positive benefit owes itself partly to the drastic cost and price falls with Price Controls after 1995 and the recently announced set of price controls. Producers gain £3.3bn (relative to the counterfactual) at 0% counterfactual cost fall (unadjusted for windfall tax. At 1% p.a. counterfactual cost fall

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period 1989-90 to 1994-95.

and 6% discount rate, the net gains are £7.3bn.

#### ***6.4. The Central Case Scenario.***

We present a central case in Table 4-3. Assuming a counterfactual cost fall of 2% p.a. in the public sector and a discount rate of 6%, and accompanied by a 2.3% p.a. reduction in controllable costs, efficiency gains net of R&P amount to £2.1bn and become negative at discount rates at or above 10%. With this central case we shall now investigate the distribution of benefits to the three groups that we described in section 4.2 above, viz., consumers, producers and the government. We vary the rate of future fall in controllable costs to 2005 in Table 5 for the central case. This shows that faster falls in controllable costs than the rate which Ofgem predicts would yield benefits to society, however basic patterns of the results are unchanged.

#### ***6.5. The Distribution of Benefits based on the Central Case Scenario***

We have found that if  $\Delta W > 0$ , assuming equal social weights, then R&P is a success in raising social value. This is the case for the ‘privatisation scenarios’ and the ‘central case scenario’ described above. An investigation into the distribution of those gains will indicate whether that allocation achieved ‘fairness’.

Our results are in line with previous studies such as Newbery and Pollitt (1997) who found that even if unit costs have fallen since privatisation, it has primarily been due to fuel cost decreases. Rising profitability and government revenues have meant that consumers were the least to benefit during the first five years after privatisation.<sup>19</sup> A summary of the distribution of gains (or losses) from R&P in the UK is given in Tables 6 and 7. Table 8 summarises the windfall tax liabilities and the sales proceeds from privatisation of the UK ESI. Figure 3 illustrates the trend in distribution and supply prices, actual and counterfactual. We can observe that there was a significant hike in prices in the initial 5 years after privatisation. It was only with the Price Control

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<sup>19</sup> The ESI’s landscape has changed considerably since 1995. We see significant changes in controls that benefit consumers or reduce the initial adverse impacts on them, even at the expense of producers and their incentives.

Reviews that prices fell drastically. Figure 4 illustrates the distribution of gains from R&P on an annual basis. It is only after 1999-00 that benefits started accruing to customers (relative to the central case counterfactual). The jumps in the distribution of benefits to consumers corroborate with the Price Control Reviews after 1995.

Table 4-3 gives the distribution of the gains (or losses) from R&P under the central case (a 2% counterfactual cost fall, a 2.3% p.a. future controllable cost reduction). We note that consumers benefit by £3.3bn (at 6%) under private ownership. The producers gained about £3.3bn and the government received £4.4bn less in taxes (or gained £5.1bn after accounting for windfall tax revenues and sale proceeds from privatisation). Higher counterfactual cost falls or higher discount rates would mean that consumers suffer from the R&P. Consumers only benefit in the Privatisation Scenarios, and at discount rates not exceeding 8% under the central case scenario.

We note an additional benefit to consumers not yet accounted for in the above results. The flotation of the NGC allowed the RECs to offer exceptional rebates of about £50 per customer, for the period 1996-7. This one-off exceptional rebate to consumers on their bills also led companies to benefit from rebates on their fossil fuel levies. The net benefit that was finally transferred to consumers amounts to £890m at 1995 prices and discounted at 6%. At 10% discount rate it amounts to £857m.

We find a potential danger to producers' profits and the possible adverse impact that this may have on future level of investment and quality of supply. The tough regulation, which brought about significant reductions in prices, and the imposition of windfall levies in 1997, leads to sharp falls in profits by 2005 (to pre-tax profit rates below those in 1989-90).

## ***6.6. A Discussion of the Results***

Setting out the factual record of the winners and losers for the first eight years of privatisation is fairly straightforward. What is more difficult is to interpret the record. There are inevitably problems of assessing the results that have occurred against what might have happened if the old public sector regime had continued. Another result of

the simultaneous changes in ownership, structure and regulation is that even where it is possible to determine outcomes, it is difficult to know how to interpret their causes (MacKerron and Watson, 1996).

Figure 2 illustrates actual versus counterfactual net controllable cost on an annual basis from 1985-6 to 2004-5 (the costs from 1998-2005 are taken as if they actually occurred, and are based on a 2.3% p.a. reduction in controllable costs, and 2%p.a. reduction in NGC charges). It is easy to understand how actual cost changes impact on the results of our SCBA. The question that we initially asked was: Does the benefit of having an eventually lower actual cost worth the initial rise in costs after R&P?

Per unit net controllable costs rose by about 18% during the first two years after privatisation. It was only after 1994-5 that per unit net controllable costs fell to reach the pre-privatisation level. The reduction was more drastic after 1996-7 when actual cost reductions beat counterfactual cost reductions of even 3% p.a. While Green (1998) found that final electricity prices for many customers to have fallen by 30% in real terms since 1990, he also pointed out that these do not necessarily mean that costs and prices have been minimised, or that distribution and supply prices have also fallen. While parts of the industry are clearly now competitive, others are not. Our assessment of the distribution and supply businesses allows us to explain the relatively slow reductions in overall average electricity prices in E&W between 1990-1 to 1994-5, even when generation and transmission costs declined in real terms during this period.

It would seem that the large number of structural changes that occurred after 1995 explain some of the rapid reduction in costs. Regulatory reviews have helped greatly after 1994-95. But the natural question that comes to mind is: How much of the cost decline is explained by the regulatory price control reviews and how much is explained by the structural changes that started taking place after 1995? Answering this question would take us beyond the objective of the present work.

Possible explanations to the initial cost increases include, a rise in materials and services costs due to sub-contracting to subsidiaries to shift costs out of regulated businesses; wage costs inflated by privatisation; discontinuities between the ABs and

the RECs; lax regulatory controls; and/or a rise in institutional costs. The eventual cost reductions and efficiency improvements could be explained by the regulatory success of the price control reviews after 1994-5, and the significant restructuring that took place after 1995 with the sale of NGC and the lifting of the 'Golden Share', leading to major acquisitions and merger activities. If price reviews after 1994-5 contributed to most of the fall in costs then the initial cost increases was largely due to regulatory failure.

Figure 4 depicts the distribution of net efficiency gains to consumers, producers and the government. It was only after 1999-00 that positive material benefits started to accrue to consumers, relative to the central case public ownership. This would suggest that the choice of our discount rate in computing the net present values of costs and benefits is crucial to yielding the kind of results that we expect.

“The regulator’s proposals for deep cost cutting in electricity distribution businesses represent a tough challenge for the industry. In addition, businesses are being faced with new and very demanding performance targets”<sup>20</sup> The future costs to producers, the gains to consumers and the large gains to the government from R&P (at the Ofgem’s projected 2.3% p.a. future cost fall) implies that the tougher regulation imposed on the RECs may possibly constitute another serious regulatory failure; failing to judge the incentive effects on the RECs and the long-term stability of the industry as a whole.

## **7. Conclusions**

Our aim has been to assess the costs and benefits of the process of R&P of the RECs in the UK ESI. We adopt an innovation, including the regulator’s price reviews for the years until 2004-5. A social cost benefit analysis is used to achieve our aim.

1. We find a rapid increase in controllable costs of the distribution and supply businesses, leaving costs at an average of 11% above the pre-privatisation period

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<sup>20</sup> Electricity Association, (1999), ‘Regulator’s price controls – electricity association response’, *Press*

during the first price control period.

2. We infer a R&P cost (at 1995 prices) equal to £1.1bn at a 6% discount rate. These costs reduce the benefits of R&P of the ESI in the UK and in the distribution and supply businesses of the RECs.
3. From the experience of ESIs in Northern Ireland, Scotland, Nuclear Electric, and the performance of the ABs during the period 1981 to 1989, a 2% p.a. counterfactual cost fall is considered reasonable.
4. Net efficiency gains from R&P, which started accruing to consumers after 1999 (relative to our central case), amount to about £2.1bn.
5. Labour productivity more than doubled in 1997-8 over its 1990-1 level, and is unparalleled by the Industrial Productivity Index. Productivity growth during the period 1970 to 1987, of 2% per annum does not match the growth experienced after 1994-95.
6. The regulatory structure (set before the creation of OFFER) that defined the initial price controls during the early years of privatisation did not contribute to cost decline. We found that the benefits of restructuring and privatisation came about mostly from institutional changes after 1995, and from distribution and supply Price Control Reviews of OFFER, and Ofgem. The costs of the RECs fell by an unprecedented rate of 30% during 1994 to 1998.
7. As a base case, we found that consumers would have paid about £3.3bn (at 2% counterfactual cost fall and 6% discount rate) less than what they would have paid under public ownership of the RECs. With the NGC rebates they were offered in 1995-6, total benefits to consumers would be about £4.2bn.
8. The government would have gained about £5.1bn (sale proceeds and total tax including windfall levies) from the R&P of the RECs.

We find rapid increases in profits during the first few years after privatisation, but the tough regulatory structures put in place have eroded these profits, accompanied by windfall taxes in 1997. With the more stringent regulation, we await to see more benefits to accrue to consumers to cover the loss in the initial periods after

privatisation. But tougher regulation designed to achieve greater levels of 'efficiency', can also significantly alter the distribution of those gains against producers, inducing perverse effects on long-run efficiency, incentives, quality of supply and service reliability.



## Glossary of Terms

Term	Definition
ABs	Area Boards, formerly the 12 Boards involved in distribution and supply of electricity to consumers
CEGB	Central Electricity Generating Board, formerly incorporating all the electricity businesses in the UK
E&W	England and Wales
ESI	Electricity Supply Industry
First-Tier Supply	The supply of electricity by a PES to customers in its own area
GJTV	Galal-Jones-Tandon-Vogelsang framework of SCBA
NGC	National Grid Company, the Company which owns the Transmission Network
NIE	Northern Ireland Electricity
OFFER	Office of Electricity Regulation, the office regulating electricity businesses in the UK
Ofgem	Office of Gas and Electricity Markets, replacing the OFFER, and incorporating the market for gas regulation (OFGAS)
PES	Public Electricity Supplier, a company providing services in the ESI, and also consists of other companies than the RECs
R&P	Restructuring and Privatisation, also referred to as liberalisation
REC	Regional Electricity Company, replacing the ABs after R&P
R&P	Restructuring and Privatisation
SCBA	Social Cost Benefit Analysis, the method of analysis used in this study
Second-Tier Supply	Supply of electricity outside a PES's own area
SESI	Scottish Electricity Supply Industry

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### *Company Accounts and Reports*<sup>21</sup>

Eastern	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
East Midlands	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
London	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Manweb	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Midlands	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Northern	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-9
NORWEB	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Seeboard	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Southern	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Swalec	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
SWEB	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8
Yorkshire	Annual Reports and Accounts 1985-6 to 1997-8 Regulatory Accounts from 1990-1 to 1997-8

### *Other Accounts and Reports*

Electricity Consumers' Council, (London)	Annual Reports 1980 to 1988.
Electricity Council, (London)	Indicators of ESI Performance 1985-88
Electricity Council, (London)	Annual Report and Accounts 1988-9

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<sup>21</sup> Other data have been gratefully received direct from the RECs themselves.

Appendix 1  
Constructing Accounts for Regional Electricity Companies 1985-6 to 1997-8 in E&W: Sources and Methods

The pre-privatisation information for the 12 RECs (i.e., the ABs) is drawn from their respective Annual Reports and Accounts and the Main Prospectus. For the post-privatisation era, both Annual Reports and Accounts of the RECs and their published Regulatory Accounts have been used. The physical data of the RECs are also drawn largely from their annual reports. However, reporting between companies differ and some data are not published. We resorted to company reports sent to us direct from the companies. In the period 1994-8, a lot of these data have been extracted from OFFER's 'Reviews of Supply Businesses', 'Price Control Reviews' and 'Draft Papers on Competition' which are published on the Ofgem's web-site. Every effort has been made to correct for discrepancies.

Here is a brief description of the items, the variations between the company spreadsheets and the adjustments made.

ITEMS <sup>22</sup>	Source and Details
Electricity Turnover <sup>23</sup>	All these items have been taken from the Main Prospectus. Area Boards' Annual Reports and Accounts have been used for crosschecking and for correction of anomalies. For Distribution and Supply Businesses, Turnover for 1986-90 are net of Purchases of Electricity. For the period 1990-1 to 1997-8 total turnover is calculated by adding Distribution Turnover (net of exceptional and extraordinary items) with the value-added in the Supply Business (equals to operating profit plus implied operating costs). Post privatisation data are obtained from the RECs Annual Reports and Accounts.
Operating costs	For the years 1986-90, the information has been taken from the Main Prospectus. For the years after 1991, the item is a sum of the distribution and supply businesses' operating costs. The item has been adjusted for depreciation following CCA, exceptional and extraordinary items. It has not been, however, adjusted to take into account the NGC exit charges since we do not have the full series of NGC-Exit charges for each company, but

<sup>22</sup> Electricity Turnover, operating costs, etc., are net of income from or costs incurred in non-electricity businesses (such as appliance retailing). These values are also net of extraordinary and exceptional items.

<sup>23</sup> The turnover for supply businesses include internal turnover. This might inflate the operating costs following these inter-segment sales but we have made no adjustments for them.

	we have the totals that we obtained from OFFER documents (hence the adjustment is attempted later to arrive at the net controllable costs). Supply operating costs are made up of distribution costs and administrative expenses.
Units Distributed (TWh)	Most data come from Annual Reports. For 1997-8, data for some companies are missing and the figures were extracted from Supply Price Control Reviews of OFFER (several volumes).
Total gross value of assets (exc. cons contributions)	For the pre-privatisation period this is given as the difference between the cost of the asset at 31 March and the value of consumer contributions at 31 March. The post-privatisation equation is the sum of the distribution and supply assets. This provided the most stable basis for projecting counterfactual profit.
NGC Exit Charges	Figures are available for 1993-4 to 1997-8 in OFFER 'Distribution Price Control Proposals' and for other years they are published in OFFER Documents. These are non-controllable costs to the RECs..
RPI - Sept.	The RPI refers to September of the financial year. It has been taken from the Monthly Digest of Statistics.
RECs Controllable Costs	These are the controllable costs of both the supply and distribution businesses aggregated (total operating costs less NGC exit charges, depreciation, and exceptional costs).
Labour Employed	Extracted from the Annual Reports and Accounts and from values sent direct by the companies.
Productivity Index Industries	This is extracted from ETAS (Economic Trends and Annual Supplement) and represents the Output per employment in Industries.
R&P Costs	Restructuring and Privatisation costs are extracted from annual reports and accounts (basically from the restructuring costs of privatisation component of exceptional items). R&P excludes flotation costs and the costs associated with OFFER. R&P costs are assumed to be zero after 1998-99.
Tax and dividends	Extracted from Annual Reports and Accounts. Prior to privatisation tax was the contributions to Electricity Council. Tax figures from the Main Prospectus give the tax liability based on the assumption that each AB was an independent entity for this purpose. For later years, for the RECs, tax liability was calculated on the same basis. Tax rate is calculated as tax a proportion of operating profit before tax. Dividends were extracted from Annual Accounts and unadjusted for exceptional dividends.

Appendix 2  
Take-Over Activity in UK ESI<sup>24</sup>

<b>Target Company</b>	<b>Bidder</b>	<b>Date of Completion</b>
SWEB plc	Southern Group (US)	18.09.95
Eastern Group Plc	Hanson plc	18.09.95
Manweb plc	Scottish Power plc	12.10.95
Norweb plc	North West Water plc	08.11.95
SEEBOARD plc	Central & South West Corporation (US)	11.01.96
SWALEC	Welsh Water plc	29.01.96
Midlands Electricity	Avon Energy	07.06.96
Northern Electric plc	CE Electric UK plc	24.12.96
East Midlands Electricity plc	DR Investments (UK) plc	10.01.97
London Electricity plc	Entergy Power (UK) plc	07.02.97
Yorkshire Electricity plc	Yorkshire Holdings	01.04.97
The Energy Group plc (Eastern)	Texas Utilities Company	19.05.98
East Midlands Electricity plc	PowerGen	27.07.98
Southern Electric	Scottish Hydro-Electric	14.12.98
London Electricity plc	Electricité de France	27.01.99
Midlands Electricity Supply Business	National Power	19.04.99
SWEB Supply Business	London Electricity (EDF)	06.99
SWALEC	British Energy	06.99

<sup>24</sup> This table is adapted from CRI's Financial and Operating Reviews 1996-7 (Table A; xviii) and 1997-8 (Table B; pxxi). We provide only those take-overs that have been completed and have excluded those that were rejected or withdrawn.

Appendix 3

Summary of Distribution and Supply Price Controls for RECs in E&W

<b>Period</b>	<b>Rate of Price (cost) Decrease (%)</b>
<b><i>Distribution Businesses</i></b>	
1990-1 to 1994-5	Variable up to 2.5% above the inflation rate
1995 to 1995-6	11 to 17% (average of 14%)
1996 to 1996-7	10 to 13%
1997 to April 2000	Average of 3% p.a.
2000 to 2004-5	One-off cut in distribution revenue by 23.4% in 2000-1 and then a 3% p.a. fall until 2005.
<b><i>Supply Businesses</i></b>	
1990-1 to 1994-5	0%
1995 to 1997-8	2% p.a. fall in costs
1998 to 1999	3 to 7% fall in costs
2000 to 2002	Price reductions of 5.7% p.a. for Standard Domestic Customers and 2.1% for Economy-7 Customers



Table 1

The Accounts for the E&W ABs and RECs 1985-98 at Current Prices (unadjusted).

	1985/6	1986/7	1987/8	1988/9	1989/90	1990/1	1991/2	1992/3	1993/4	1994/5	1995/6	1996/7	1997/8
<b>£m current</b>													
<b>Turnover</b>	1928	2066	2053	2363	2640	3741	4239	4427	4659	4879	4544	4399	4407
<i>Less</i> NGC-Exit Charges						230	246	262	275	289	278	272	221
Turnover <i>net</i> of NGC charges	1928	2066	2053	2363	2640	3511	3993	4165	4384	4590	4266	4127	4186
<b>Total Costs</b>	1643	1730	1826	1991	2211	2962	3133	3162	3237	3270	3089	2927	2916
<i>of which</i>													
<b>Distribution costs</b>						1870	1914	1895	1966	1964	1798	1590	1542
<i>Less</i> NCG-Exit Charges						230	246	262	275	289	278	272	221
<i>equals</i> Distribution controllable costs						1640	1668	1633	1691	1675	1520	1318	1322
<b>Supply controllable costs</b>						420	450	479	464	487	445	443	483
<b>Depreciation CCA</b>	501	517	551	594	640	672	769	788	807	820	847	894	891
<b>Operating Profit CCA</b>	285	336	227	372	429	779	1106	1265	1423	1609	1454	1472	1491
Gross Value of Assets	25306	25872	27049	28751	30020	30383	37336	38207	39108	41421	42483	43960	43404
Tax	211	211	185	234	288	336	387	416	431	539	388	435	502
Dividends						229	375	432	502	586	2270	910	838
Units Distributed TWh	209	215	221	226	230	236	228	238	242	245	253	257	263
Labour RECs	80291	82588	82212	83196	82500	82288	81135	77329	71149	65062	57317	50353	47783
Productivity Index E&W ESI	94	93	97	98	100	103	101	111	122	135	159	183	201
Productivity Index UK Industries	85	92	95	98	100	101	106	112	117	123	124	125	128
RPI - Sept	95	98	102	108	117	129	135	139	142	145	150	154	159

Table 2:  
The Efficiency Savings

<b>Discount Rate</b>		<b>5%</b>	<b>6%</b>	<b>8%</b>	<b>10%</b>	<b>12%</b>
<b><i>Counterfactual cost fall £bn (1995 Prices)</i></b>	0%	19.7	14.7	9.3	6.3	4.5
	1%	11.5	8.3	4.8	2.9	1.7
	2%	4.9	3.2	1.2	0.2	-0.5
	3%	-0.9	-1.4	-1.9	-2.3	-2.6
	4%	-6.0	-5.4	-4.8	-4.5	-4.4
	5%	-10.5	-8.9	-7.3	-6.5	-6.0
<b><i>Levelised p/kWh starting in 1994-5</i></b>						
<b><i>Counterfactual cost fall</i></b>	0%	0.28	0.27	0.24	0.20	0.18
	1%	0.17	0.15	0.12	0.09	0.07
	2%	0.07	0.06	0.03	0.01	-0.02
	3%	-0.01	-0.02	-0.05	-0.07	-0.10
	4%	-0.09	-0.10	-0.12	-0.15	-0.17
	5%	-0.15	-0.16	-0.19	-0.21	-0.24
<b><i>% cost/kWh</i></b>						
<b><i>Counterfactual cost fall</i></b>	0%	21%	20%	18%	15%	13%
	1%	12%	11%	9%	7%	5%
	2%	5%	4%	2%	0%	-2%
	3%	-1%	-2%	-4%	-6%	-8%
	4%	-6%	-7%	-9%	-11%	-13%
	5%	-11%	-12%	-14%	-16%	-18%

Table 3  
Restructuring and Privatisation Costs of the RECs.

Year	1988/9	1989/0	1990/1	1991/2	1992/3	1993/4	1994/5	1995/6	1996/7	1997/8
<i>£m Actual R&amp;P</i>	7.4	55.5	83.6	35.4	89.6	153.6	153.9	224.7	104.4	112.7
<i>R&amp;P 1995 Prices</i>	9.9	69.0	93.8	38.1	93.2	157.0	153.9	217.1	98.5	102.9
<i>R&amp;P p/kWh</i>	0.00	0.03	0.04	0.02	0.04	0.06	0.06	0.09	0.04	0.04
<i>Discount Rate</i>			5%	6%	8%	10%	12%			
<i>Total £m</i>			1066	1074	1092	1112	1134			

Table 4

Net Efficiency Gains from R&P and its Distribution at Various Discount Rates

Discount Rate	5%	6%	8%	10%	12%
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**Table 4-1: Strong Pro-Privatisation Scenario (c.f. Cost Fall 0% pa)**

Producers	3.2	3.3	3.4	3.4	3.4
Government	-6.0	-4.4	-2.8	-1.9	-1.3
Consumers	21.4	14.8	7.6	3.7	1.3
<i>Total</i>	<i>18.6</i>	<i>13.7</i>	<i>8.2</i>	<i>5.2</i>	<i>3.4</i>

**Table 4-2: Pro-Privatisation Scenario (c.f. Cost Fall 1%)**

Producers	3.2	3.3	3.4	3.4	3.4
Government	-6.0	-4.4	-2.8	-1.9	-1.3
Consumers	13.2	8.4	3.1	0.3	-1.5
<i>Total</i>	<i>10.4</i>	<i>7.3</i>	<i>3.7</i>	<i>1.8</i>	<i>0.6</i>

**Table 4-3: Central Case Scenario (c.f. Cost Fall 2%)**

Producers	3.2	3.3	3.4	3.4	3.4
Government	-6.0	-4.4	-2.8	-1.9	-1.3
Consumers	6.7	3.3	-0.5	-2.5	-3.7
<i>Total</i>	<i>3.9</i>	<i>2.1</i>	<i>0.2</i>	<i>-1.0</i>	<i>-1.7</i>

**Table 4-4: Pro-Public Scenario (c.f. Cost Fall 3%)**

Producers	3.2	3.3	3.4	3.4	3.4
Government	-6.0	-4.4	-2.8	-1.9	-1.3
Consumers	0.9	-1.3	-3.7	-4.9	-5.7
<i>Total</i>	<i>-1.9</i>	<i>-2.4</i>	<i>-3.0</i>	<i>-3.4</i>	<i>-3.7</i>

**Table 5:**  
**The Central Case Scenario Under Different Levels of Future Cost Reductions**

Discount Rate	5%	6%	8%	10%	12%
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**Table 5-1: Central Case with 2% p.a. Future Cost Fall (C.f. Cost Fall 2%)**

Producers	2.8	3.0	3.2	3.3	3.3
Government	-6.2	-4.6	-2.9	-1.9	-1.4
Consumers	6.7	3.3	-0.5	-2.5	-3.7
<i>Total</i>	3.3	1.7	-0.1	-1.1	-1.8

**Table 5-2: Central Case with 2.3% p.a. Future Cost Fall (C.f. Cost Fall 2%)**

Producers	3.2	3.3	3.4	3.4	3.4
Government	-6.0	-4.4	-2.8	-1.9	-1.3
Consumers	6.7	3.3	-0.5	-2.5	-3.7
<i>Total</i>	3.9	2.1	0.2	-1.0	-1.7

**Table 5-3: Central Case with 3% p.a. Future Cost Fall (C.f. Cost Fall 2%)**

Producers	4.1	4.0	3.8	3.7	3.6
Government	-5.5	-4.1	-2.5	-1.7	-1.2
Consumers	6.7	3.3	-0.5	-2.5	-3.7
<i>Total</i>	5.2	3.1	0.8	-0.5	-1.4

**Table 5-4: Central Case with 3.3% p.a. Future Cost Fall (C.f. Cost Fall 2%)**

Producers	4.5	4.3	4.0	3.8	3.7
Government	-5.3	-4.0	-2.5	-1.7	-1.2
Consumers	6.7	3.3	-0.5	-2.5	3.7
<i>Total</i>	5.8	3.5	1.1	-0.3	-1.2

Figure 1  
The Composition of Turnover in RECs and ABs 1985-6 to 1997-8

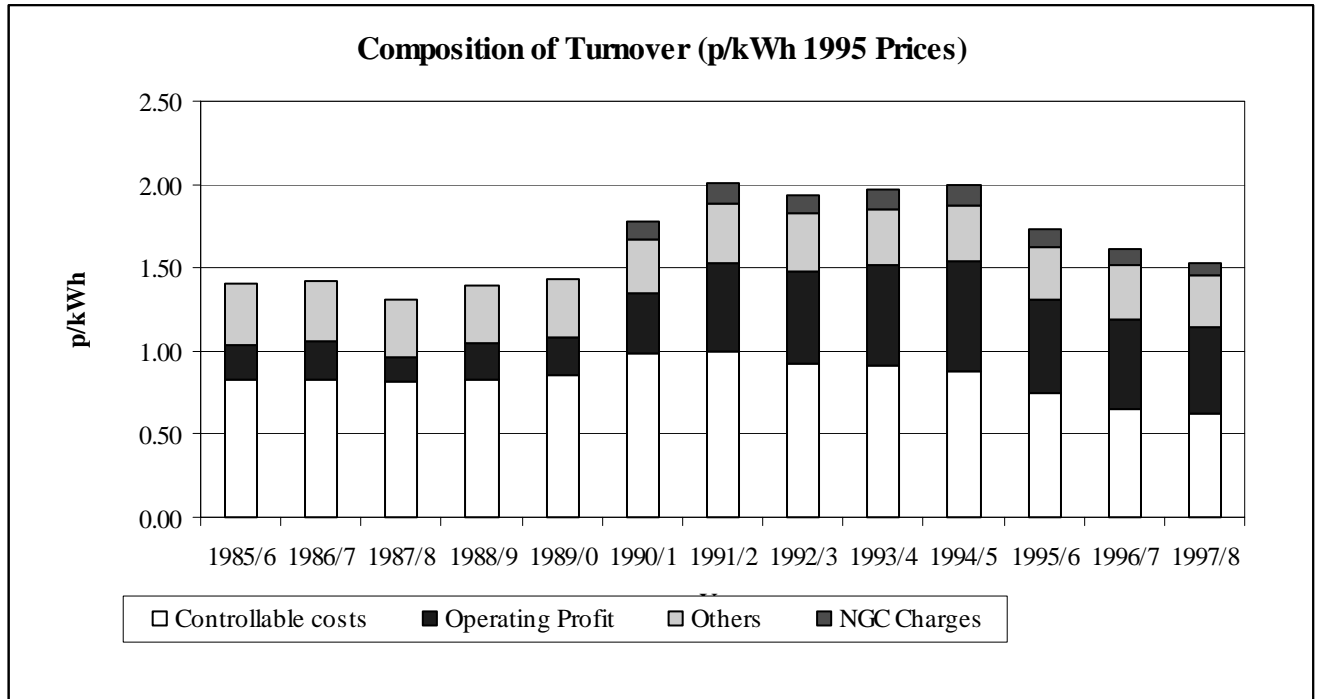
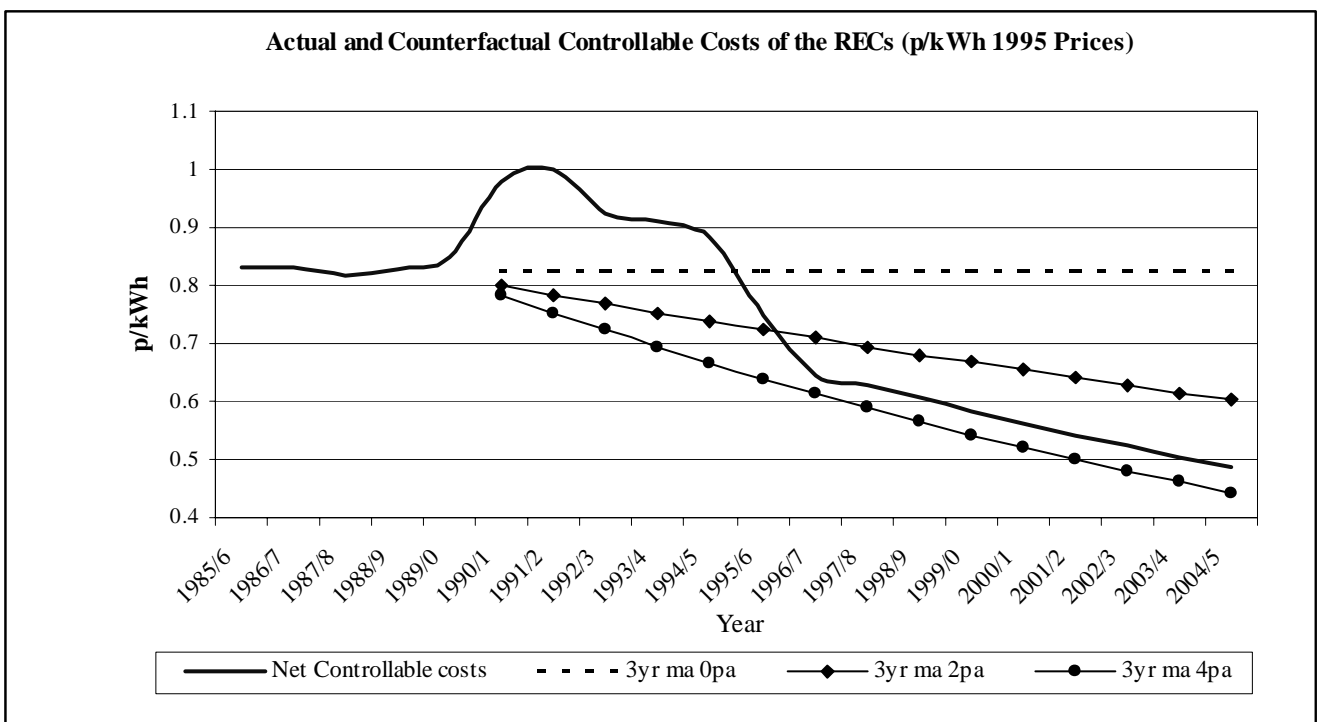
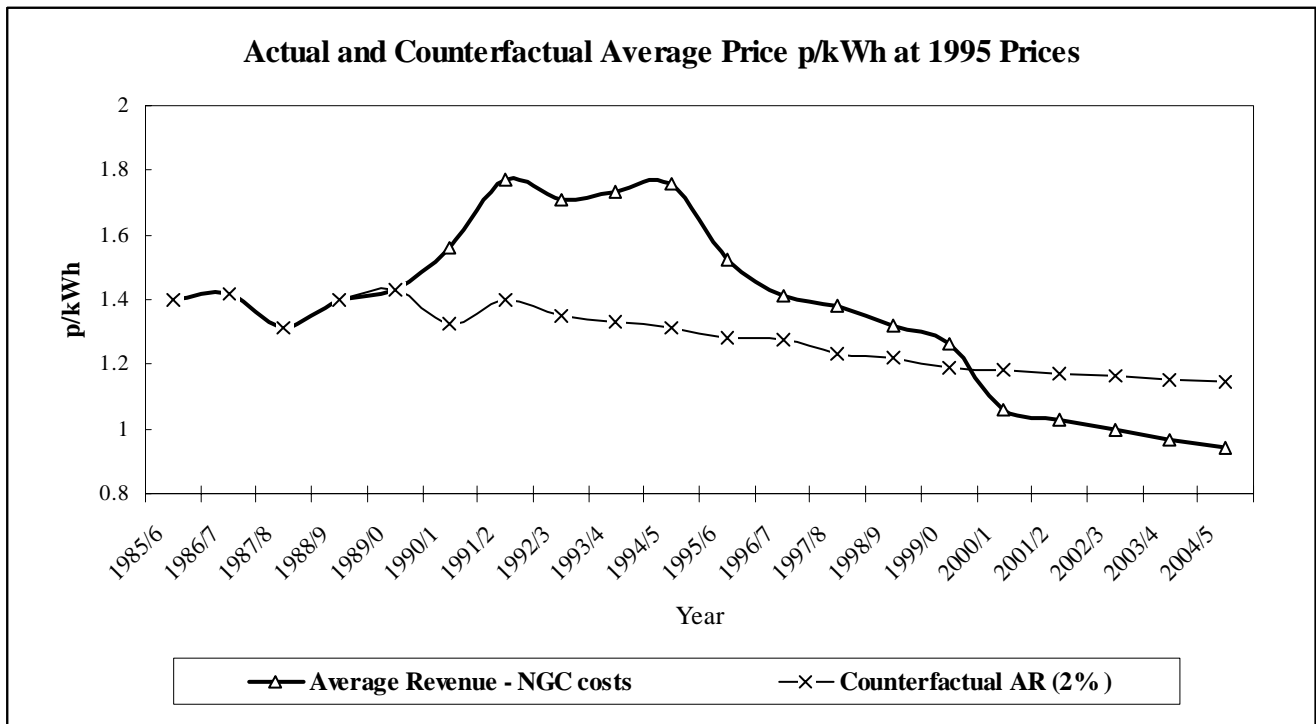


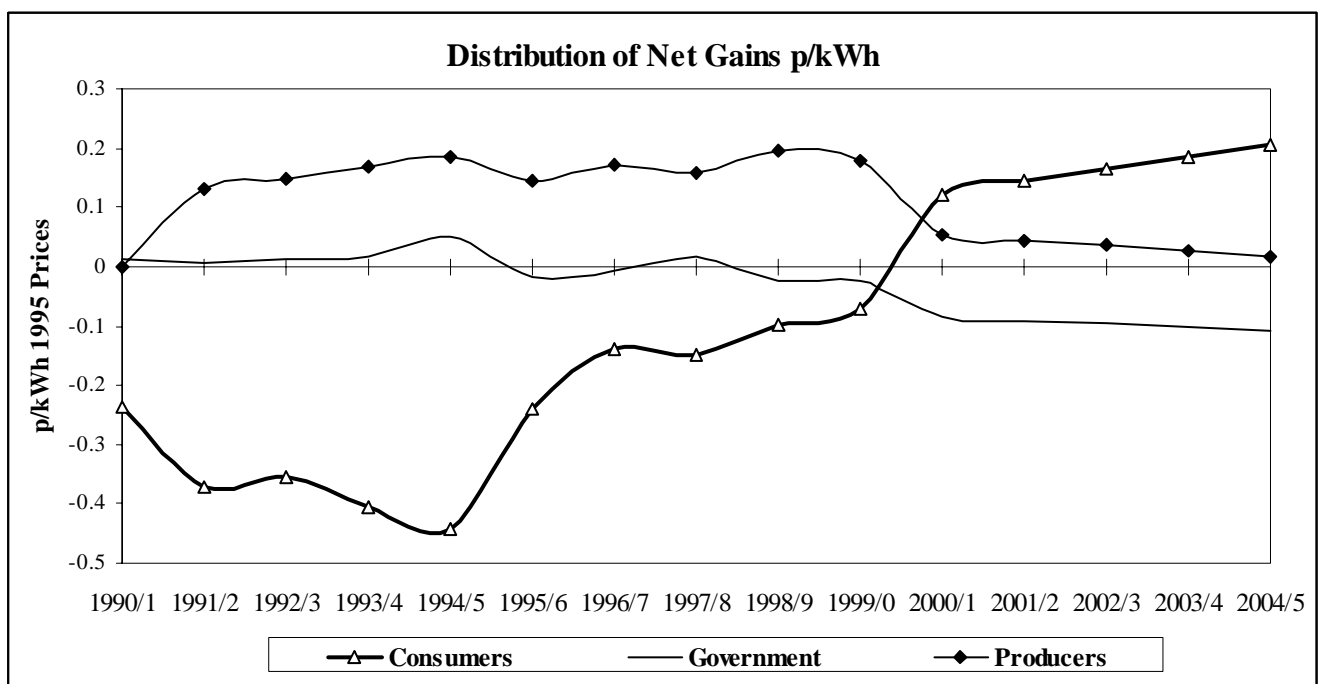
Figure 2  
Actual and Counterfactual Controllable Costs of RECs (1995 Prices)



**Figure 3**  
Actual and Counterfactual Price



**Figure 4**  
The (Annual) Distribution of Efficiency Gains from R&P of the RECs in E&W



**Figure 5**  
**Labour Productivity in E&W ESI and UK Industries 1985-6 to 1997-8**

