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Restructuring and Privatisation of the UK Electricity Supply Industry

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I INTRODUCTION

1. The UK electricity supply industry has been restructured quite frequently during its 100-year existence. The most recent proposal, by the Plowden Committee, was that the CEGB and Area Boards should be consolidated into a single organisation, akin to the British Gas Corporation. This proposal, adopted by the Labour government in 1978, was shelved by the incoming Conservative administration. Current discussions on restructuring seem to envisage a quite opposite philosophy, involving the break-up of the industry, especially the CEGB, into several quite independent organisations.

2. The discussion on restructuring (if indeed it can be called a discussion yet) is taking place within the context of the government's policy on privatisation, which emphasises the transfer from public to private ownership and the stimulation of competition as means to increase the role of market forces. The Energy Act 1983 represented a step in this direction, by facilitating the generation and supply of electricity by persons other than Electricity Boards. The Conservative Party election manifesto of June 1983 contained a commitment to "seek other means of increasing competition in, and attracting private capital into, the gas and electricity industries". Explicit government proposals to privatise the industry are reported to be imminent, and these will necessarily involve a degree of restructuring.

3, Two main proposals for restructuring have been put forward, differing essentially as to whether the generation side should be combined with, or separated from, the distribution side. One proposal is to create a number of regional power boards, each responsible for both generation and distribution. A typical power board would comprise

two or three of the present Area Boards plus the corresponding region of the CEGB. The alternative proposal is to split the CEGB into 5 independent-generating companies, again corresponding to the present CEGB regions. These companies would be quite separate (as regards ownership) from the Area Boards, and the Area Boards themselves would be made into independent companies. A variant of this second proposal is to sell the CEGB power stations individually or in small groups, so that somewhat more than 5 independent generating companies would eventually emerge.

4. Either of these two main proposals would be compatible with the transfer of all or part of the industry to private ownership. Depending upon the scheme adopted, it may be necessary or desirable to design some form of regulation and/or to take further action to facilitate competition. The present paper attempts to appraise and compare the various alternative possibilities of restructuring, privatisation, regulation and competition.

II CRITICISMS OF THE INDUSTRY

5. The electricity supply industry has been characterised by almost continuous expansion, and its future prospects are good. It is a profitable industry whose occasional financial difficulties have stemmed entirely from government intervention. In recent weeks it has been the government, rather than the industry, which has sought to increase electricity prices. The industry is generally thought to be efficiently managed, and is seldom, if ever, subject to the criticisms levelled at the declining and loss-making nationalised industries. What, then, is the case for restructuring and privatising?

6. If a company consistently makes profits and expands in the face of competition, one is generally justified in concluding that it is efficiently managed. However, where competition is lacking this conclusion does not necessarily follow. Increasing demand and/or rises in price may well conceal a variety of inefficiencies.

7. The electricity industry is subject to a degree of competition from other fuels for certain uses (notably heating), but for other uses (e.g. lighting) competition is negligible. Apart from self-generation, until 1983 the CEGB and Area Boards had a statutory monopoly of both generation and distribution, and there is no direct competition for customers between Boards. Thus, within England and Wales, there is no direct comparison by which to evaluate the efficiency of the industry; one has to look to Scotland and Northern Ireland, Europe and the USA, where conditions are often somewhat different.

8. The UK industry has by no means been immune to criticism, by official committees (e.g. Price Commission 19 , MMC investigations of the CEGB and Yorkshire Electricity Board, 1983 and 19), by electrical engineers and by academic economists (Pryke 1981, Redwood

1980). The most important allegations are as follows:

i) Poor demand forecasting, slowness to respond to changing economic conditions, and lack of sensitivity to consumer response;

ii) Delays in power station construction;

iii) Eratic choice of generator size and technology, including choice of wrong nuclear reactor type;

iv) Excessive planning margins;

v) High manning levels and low productivity, especially at power stations but also at area Boards;

vi) Willingness to pay high prices for UK coal, and to hold high stocks;

vii) Overall losses on appliances, installations, servicing and other contract work, (partly due to nationally agreed high salary scales);

viii) Low thermal efficiency of power stations and low availability of generatiors;

ix) Use of inadequate investment appraisal techniques by the CEGB;

x) Lack of urgency in implementing needed reforms.

9. Criticism has also been levied at the government's role in the industry - for example, in pressuring the industry to buy British plant and equipment, not to import coal, and to increase the power station ordering rate. The electricity industry has been used to maintain the workload of ancillary industries (including the main generator manufacturers and the coal industry), and to manipulate public expenditure and finance.

10. These criticisms suggest that there is ample scope for increasing efficiency in the electricity industry and for operating more directly to the benefit of consumers. The scope for improvement is probably greatest at the generating stage, particularly in design and construction rather than in operation and scheduling, but it is by no means confined thereto: area board investment decisions and operations have also been subject to criticism. Of course, in a world characterised by uncertainty and costs of monitoring performance, one cannot hope for perfection: the task is to identify some practical modifications in structure, ownership, regulation or competition which are likely to lead to a worthwhile <u>improvement</u> in performance.

III REGIONAL POWER BOARDS

11. An argument for regional power boards was put forward by the Midland Electricity Board in its submission of evidence to the Plowden Committee. The then-chairman of the MEB, Mr. Geoffrey Shepherd, has since expanded on this theme. The following is an attempt to expand and illustrate this idea.

12. The argument for regional power boards rests on the following propositions:

i) The electricity supply industry has shown up badly on cost-effectiveness from about 1960.

ii) This is largely due to the poor performance of the CEGB in respect of capital expenditure (design and construction of power stations).

iii) This in turn is due to the centralisation which took place about 1958 with the formation of the CEGB.

iv) Prior to 1948 the de facto decentralisation of design and construction meant that the market-orientation of the Area Boards ensured cost-effectiveness.

v) There is a great deal of duplication at regional level between the CEGB and Area Boards.

vi) Increased efficiency can only be attained by the use of competition or yardsticks.

vii) Over-centralised decision-making is disastrous if wrong, particularly in the case of power station design and construction.

viii) In the interest of exports, among other reasons, design expertise should reside with the manufacturers rather than a monopoly buyer.

ix) Change should be kept to a minimum, consistent with effectiveness.

x) The solution is to unify the generation and distribution functions in 5 or 6 joint power boards, building on the existing framework of Area Boards and CEGB regions.

xi) Since 1954 the Scottish boards, and foreign organisations, have demonstrated the advantages of joint boards competing with each other in regard to performance.

13. The CEGB presently consists of 5 regions responsible for operating generating stations, plus 3 divisions responsible for design and construction, transmission and research. Each CEGB region is essentially co-terminous with two or three Area Boards. The proposal is that each power board should comprise one CEGB region plus the two or three associated Area Boards. (One or two additional power boards might be formed by splitting up the Midlands and South Eastern CEGB regions, which each have two Area Grid Control centres.) The transmission facilities of the CEGB would remain as a single entity, to be operated as a national grid exactly as at present. (More precisely, the 5088 route km of 400 kV transmission lines would remain as a 'super grid', but some of the 1971 route km of 275 kV and lower voltage lines might be transferred to the regional boards, and similarly for transformers and substations.) The generation, development and construction division ("Barnwood") would be disbanded, with staff taken on by the power boards or manufacturers as required. The same would presumably apply to the research division. The Electricity Council would be much reduced in size, and would deal only with strategic matters.

14. The "average" power board would have 3½ times as many staff, and 7½ times the value of assets, of the "average" existing Area Board. Its assets would be comparable to the entire National Coal Board, or equal to British Rail, the Post Office and British Airways combined. Table 1 calculates the approximate sizes of each resulting power board. (It is a very rough calculation because CEGB generating staff and assets are simply allocated to regions on the basis of power supplied and number of stations, and no account is taken of CEGB transmission facilities and divisional staff which might be taken on by the boards.) The smallest power board would have annual sales of about £1.3 billion on net assets of about £5.1 billion and a staff of about 20,000. The largest power board would have sales of about £2.2 billion on net assets of about £7.6 billion and a staff of about 31,000. They would thus be very substantial organisations, lying somewhere between 20th and 40th in a ranking by turnover of UK public limited companies, but very much higher in terms of assets.

15. If it were thought desirable to have rather more and smaller power boards, up to a dozen such boards could be created, based on the existing 12 Area Boards plus the approximate parts of the CEGB regions. (Indeed, before the setting up of the CEGB in 1958, the generating side of the industry was divided into 12 divisions coterminous with the Area Boards.)

Table 1 Approximate Sizes of Regional Power Boards

	Sales (£m)	Net Assets (£m)	Staff ('000)
South Eastern Region CEGB		4911	11
London Area Board	715	890	9
SE Area Board	572	702	7
E Area Board	910	1067	9
Total Power Board	2197	7570	36
South Western		3732	9
S West	429	606	6
S	811	1016	9
S. Wales	388	390	4
Total	1628	5744	28
Midlands		3929	10
EM	708	751	8
M	786	926	9
Total	1494	5606	27
North Eastern		3339	9
Y	799	910	8
NE	513	592	6
Total	1312	4841	23
North Western		3732	7
M & N Wales	528	552	6
N West	737	825	9
Total	1265	5109	22

Sources: Electricity Council Annual Report 1981/82
CEGB Annual Report and Statistical Yearbook 1982/83 (see text).

Note: An alternative estimation of CEGB regional assets, taking CEGB net assets of £24660 m., excluding work-in-progress £5000 m. (Construction Division), and giving double weight to nuclear capacity, yields £4500 m., 4200, 4400, 3500 and 2400 for the 5 regions.

Further note yet another another calculation which excludes transmission and work in progress as follows:

	000 m.
South East	2085.4
South West	2938.7
Midlands	3924.9
North East	3256.5
North West	1501.7
Total	13707.2

IV CRITIQUE OF REGIONAL POWER BOARDS

16. The crucial argument for regional power boards is that they would increase the cost-effectiveness of capital expenditure on the generating side. Would they do so? Are they the only means of doing so? Are they the best means? Would they improve cost-effectiveness in other parts of the industry?

17. One argument for a centralised CEGB is that it facilitates the national co-ordination of investment in generating facilities. It seems unlikely that the creation of separate regional power boards would sacrifice this co-ordination. Each power board would have to compare the costs and risks of expansion against the costs and risks of buying in from other boards via the Grid, and against the revenues from selling to other boards. Each board would be reasonably aware of the commissioning and decommissioning plans of other boards: if necessary an explicit co-ordinating committee could be set up (as in the New York Power Pool) - subject of course to considerations of competition policy. There would thus be a tendency towards a cost minimising pattern of investment across the country as a whole. In addition, there would be the advantage of a diversity of views being embodied, so that risks would be spread and response to change would be speedier.

18. This defence of the power boards rests rather crucially on the assumption that they will commission and decomission their own plant, and buy and sell power from and to the Grid, according to the criterion of minimum cost. But would they? If they were privately-owned, unregulated, and operating in an unrestricted capital market, the incentive to maximise profit and minimise total costs would be relatively strong. But if they are publicly owned, would there not

be a tendency to increase the value or size of their own generating plant, and to go for a greater degree of self-sufficiency (or "exports") than costs alone would warrant? Even if the power boards were privately-owned but regulated with respect to prices and profits, there would be an incentive to over-expand the capital rate based in this way as long as revenues could be recouped from the monopolised distribution side.

19. Setting aside for the moment any change in the pattern of ownership, one would expect the power boards to operate with a comparable degree of efficiency to the present Area Boards. If, as alleged, the Area Boards are indeed more efficient that the CEGB, and if their efficiency would not be affected by a very significant increase in size, then power boards would constitute an improvement over the CEGB. A further investigation of the Scottish boards might be warranted here: some claim that they are more efficient, others that integration caused more difficulties than it solved.

20. As noted above, however, the efficiency of the Area Boards has itself been subject to criticism. The power board proposal does not address this issue at all. It assumes that "competition in performance" will be sufficient to secure efficiency. But this is quite different from competition for customers in the market. Managerial incentives in the Area boards will remain unchanged, and the vulnerability to government pressures will remain. Furthermore, the power board proposal will not alleviate the problem of monopoly on the distribution side. Most consumers in each area would still have only one source of supply.

21. We discuss later how far it may be possible to increase the role of market forces in the distribution side of electricity, by privatisation

and/or competition. For the moment, however, it seems worth enquiring whether there is some other form of restructuring the CEGB which would introduce competition in generation in a more direct way and which therefore would offer even greater savings than power boards could.

V INDEPENDENT GENERATING COMPANIES

22. An alternative possibility is that the CEGB could be split into several generating companies without attaching these to Area Boards. One such proposal has recently been advocated by three Conservative MP's (Tim Eggar, Michale Grylls and Kenneth Carlisle).
The 5 CEGB regions would each constitute a separate company, and would then compete to sell to the Area Boards (and to individual large customers?) via the National Grid.

23. How far would it be possible and desirable to maintain the existing system of scheduling? Under the present system, CEGB National Grid Control (after collecting information on area demands, costs and availabilities) issues target import or export transfers to the Area Grid controls (where these Areas are generally coterminous with the Regions). Each Area Grid Control is then responsible for planned loading of its generating sets to meet the inter-area transfers at least cost, and for despatching sets to follow demand as it occurs in that area while maintaining target transfers. Under the power board proposals, the same arrangement could continue to operate (together with a procedure for crediting boards for transfer power).

24. With independent genrating companies, procedure would differ in two respects. First, National Control would not issue target import and export transfers from one area to another. Rather, it would issue target export transfers from each generating company to the National Grid, and this latter organisation would be responsible for delivering the "target" power to each Area Board. Second, it has to be decided which generating company will be responsible for "following the demand" (within each planning period) for each Area Board. Presumably each Area Board will contract with one of the generating companies to do this; an obvious possibility would be a co-terminous company, but it would presumably be open to other companies to tender for the contract. Apart from these two modifications, the present national grid control system could be maintained.

25. It would, of course, be open to regional power boards or independent generating companies to adopt a different mechanisation for co-ordination of supply. As separate organisations, rather than as regions of a single organisation, they may adopt a different perspective. They may, on the one hand, be keener to adopt centralised scheduling and dispatch, or they may prefer a more decentralised system involving bids to supply which would be ranked and matched with demand by Grid control and/or Area Boards. Both these systems are well-known in the USA (e.g. the New York Power Pool uses central dispatch, the Florida Power Pool uses brokering), although the members of these US power pools are typically joint generation and distribution boards. The point to establish here is that power boards and generating companies could, without difficulty, adopt the present national grid control procedures (which are generally held in high regard), but could adopt some other system if it promised significant advantages.

26. Would the creation of independent generating companies jeopardise the level or pattern of investment in new facilities? A generating company would no longer have a secure monopoly on supply (as the CEGB does), nor would the distribution side of a power board be available as a "captive market" or security for the generating side. A generating company would have to appraise potential power station construction in the light of likely market prices for electricity, as embodied in the pattern of marginal cost prices established by the national Grid. But this, in effect, is what regional power boards would have to do. Their investment appraisals would be dominated by national grid prices, rather than by their own requirements. (To illustrate, the Midlands region presently generates 33% of the power in the country, but its Area Boards account for only 19% of the national demand; consequently, over one third of the Midland region's generation is for export to other regions.) Moreover, long term contracts between generating companies and Area Boards should not be ruled out: they are not incompatible with the operation of a national grid control. Finally, as with power boards, explicit co-ordination of investment need not be ruled out, though considerations of competition policy become important here. To summarise, there is no general presumption that the creation of independent generating companies would adversely affect the timing or geographical pattern of power station construction.

27. The great advantage of independent generating companies, <u>over and above</u> the advantages offered by regional power boards, is that they would be exposed to <u>real</u> competition with each other, not merely "competition in performance". This competition would take two forms: competition to supply the national grid (in the form of transfers agreed upon just before each planning period), and competition to

be the "residual supplier" of each Area Board (for variations in demand above the planned transfers). Each generating company would make profits or losses, expand or contract, survive or die, according to its relative efficiency in the construction and operation of power stations. Competition would not be precluded or distorted by a national monopoly of generation or by regional monopolies of distribution.

28. A subsidiary advantage is worth noting. The creation of generating companies would seem easier, from a political and administrative point of view, and therefore less costly, than the creation of power boards. It requires the restructuring of only one organisation (the CEGB). The Area Boards would not need to be touched. There is no requirement to merge three or four separate organisations, with the associated difficulties of balancing power and promoting and demoting.

29. The tentative conclusion is that restructuring of the CEGB is likely to provide a greater improvement in efficiency if it takes the form of independent-generating companies rather than joint power boards.

VI INDIVIDUAL POWER STATION COMPANIES

30. The proposal just examined evisaged 5 generating companies, corresponding to the CEGB regions. By sub-dividing these regions, a dozen such companies could be formed. But why stop there? The CEGB currently operates 100 power stations - is there any reason why up to 100 independent generating companies should not be created?

31 The creation of many smaller generating companies would increase the strength of competition and the role of market forces. For example, there would be less danger of monopoly or collusion at the generating stage and greater choice of supply for Area Boards. (Admittedly electricity is a homogeneous commodity, but the terms on whcih it is supplied - such as price, duration and reliability - can vary widely.) There would be a more active market for executive latent, and more chance for managers to try out new ideas with respect to design, construction, operation, scheduling, pricing and so on.

32. On the other hand, grouping power stations may reduce the risks of serious outages, or of sudden changes in relative prices of fuels. A mix of plant vintages will facilitate continuity of employment. There may also be economies of scale in managing power stations.

33. Unfortunately, we know very little about the costs and benefits of different-sized generating companies, because for the last 40 years or so organisational structures in the electricity industry have been determined primarily by political and administrative considerations rather than by market forces. Using a CEGB region as the basis for forming an independent company certainly minimises the change from the present structure, but it is by no means clear that a group of some 20 geographically proximate power stations is "about right".

It is therefore important to ensure that if quite different groupings of power stations seem to offer advantages - for example, associated with particular coalfields, ports, oil refineries or equipment manufacturers - then such new groups would be able to emerge. Splitting the CEGB into its constitutent power stations, at least into a large number of generating companies, would probably give more flexibility in this respect than would the creation of just 5 companies based on the current CEGB regions.

VII PRIVATISATION

34. The major benefits of private versus government ownership may be summarised briefly:

- greater incentive to produce goods and services in the quantity and variety which consumers prefer;
- more efficient, lower cost methods of production;
- strengthening of competition since profits and losses do matter;
- growth of more successful companies, decline of less successful ones;
- "natural selection" process accentuated by capital markets;
- removal or reduction of political pressures and government intervention, with respect to investment, pricing and employment;
- greater scope for redeploying assets, innovating and changing the focus of business;
- better functioning markets for exectuvie talent;
- greater flexibility and responsiveness to changing market conditions, not only with respect to methods of production and variety of product, but also with respect to forms of organisation and contractual arrangements.

35. Privatisation may also involve certain disadvantages:

- greater incentive to exploit monopoly power commercially where competition is ineffective;
- less willingness to provide uneconomic services;
- release of resources (notably unemployment) due to faster elimination of insufficient production and restrictive labour practices.

36. There is very considerable evidence on the effects of ownership in electric power utilities in the USA, which is broadly consistent with the above claims.

"The evidence suggests that municipal firms, relative to privately-owned regulated firms, in general will charge lower prices; have greater capacity; spend more on plant construction; have higher operating costs; engage in less wealth-maximizing price discrimination, including fewer peak-related tariffs; relate price discrimination less closely to the demand and supply conditions applicable to each group of users; favour business relative to residential users; offer a small variety of output; change prices less frequently and in response to larger changes in economic determinants; adopt cost-reducing innovations less readily; maintain managers in office longer; exhibit greater variation in rates of return." (De Alessi, 1974)

37. In the UK electricity supply industry, privatisation poses its main problems with respect to monopoly and the provision of uneconomic services (notably to rural areas and "small" customers). Both these problems apply to the distribution side rather than the generating side of the industry. We examine first the generating side, where there are no obvious disadvantages to privatisation, and many advantages can reasonably be expected. The next section discusses the problems of privatising the Area Boards, and the measures that might be adopted to deal with these problems.

VIII PRIVATISATION OF GENERATION

38. It was noted above (para 18) that private ownership of power boards would reduce the incentive to engage in "empire-building" for its own sake. It would provide a greater incentive to secure the cheapest and most reliable source of power, regardless of whether this was self-generated or purchased from another power board or an independent supplier.

39. The drawback is that private ownership might exacerbate the exploitation of monopoly power at the distribution stage. We discuss below how this might be limited by increasing competition, but some form of price or profit regulation might also be demanded. This would in turn create two further disadvantages. Regulation would encourage over-expansion of the capital rate base and encourage a "cost-plus mentality". Regulation would also restrict the functioning of the capital market insofar as it would hinder the identification and encouragement of efficient companies and the take-over of inefficient ones.

40. Privatisation could also be expected to increase the benefits of creating independent generating companies. Competition between them would be sharper, and their organisational structure more responsive to changing market conditions. Moreover, privatisation of generating companies would present no problem of monopoly that could not be handled by the existing institutions of UK competition policy.

41. We tentatively concluded earlier (para 29) that restructuring of the CEGB was likely to provide a greater improvement in efficiency if it were in the form of independent generating companies rather than joint power boards. We now conclude further that, with independent generating companies, privatisation is likely to bring

greater net gains, over and above those of restructuring, because the danger of distribution monopoly exploitation is removed. Finally, we conclude that, because there are fewer obstacles to overcome, the creation of generating companies is more likely to facilitate privatisation than is the creation of joint power boards.

42. It is not clear whether it would be easier to privatise 5 generating companies of 100 power stations or some intermediate structure. Arguments can be made for each possibility. Perhaps at this stage the most important point to re-emphasise is that whatever restructuring does take place should not be "once and for all". Subject to considerations of competition policy, there should be ample scope for further restrucuring (via takeovers and hiving off) as market forces begin to operate and provide hitherto unavailable information about the advantages and disadvantages of alternative organisational groupings. Indeed, this may be one case where restructuring the industry so as to maximise expected subsequent proceeds of flotation may be justified, since the flotation value of the companies formed will be reduced by the expected costs of post-flotation restructuring.

43. One final point perhaps deserves clarification. It is sometimes asked whether anyone would be willing to buy a power station - or, for that matter, a group of power stations or even a whole generating region of the CEGB. Any investment which offers a return on capital at least equal to that which can be obtained on other investments of comparable risk should have no trouble in attracting buyers. If the power station or generating company were auctioned to the highest bidder, the price realised should approximate to the present value of the assets' likely future earnings stream. If this price is below the current book value of these assets, this indicates that

the assets are currently over-valued in the books. Alternatively, if only a small proportion of UK generating capacity is being auctioned, not sufficient to affect the price of electric power a low realised value at auction could indicate that the present price of electric power is too low. It might appear that further privatisation would lead to increased electricity prices. However, uneconomically-low electricity prices would need to be raised even without privatisation in order to avoid the higher costs consequent upon the misallocation of resources. There is some evidence that electricity prices have been too low recently (the CEGB made a loss in 1981-82 and a return of only 3.8% on net assets in 1982-83); privatisation would go far to preventing this.

IX PRIVATISATION AND REGULATION OF AREA BOARDS

44. It has so far been assumed that the Area Boards will remain as presently constituted. What, if anything, should be done about them? It was noted above (paras 8-10) that the efficiency of the Area Boards has been subject to various criticisms. It was argued (para 34) that privatisation would increase efficiency in various ways, but admitted (paras 34, 37, 39) that this might exacerbate the exploitation of monopoly power at the distribution stage, and might preclude or reduce the provision of uneconomic but socially desired services.

45. To meet these problems, one widely-advocated remedy is government regulation. For example, the (privately-owned) Area Boards might be licensed as is proposed for telecom networks (including BT). The licence would specify certain obligations, which might include the provision of specified socially-desired services (e.g. to rural areas or small consumers), and there might be limitations on prices or profits. The process of drawing up BT's licence has provided numerous insights as to what conditions the licence should or should not contain. These do not concern us here. Suffice it to say that the aim should be to provide the maximum freedom for licencees and potential entrants, subject to securing the desired uneconomic services and protection against monopoly. There is however, a very real danger that new entry will be prevented or hindered by regulation (partly as a result of "capture") and that efficiency will be discouraged by a cost-plus approach to profit or pricing. Regulation is also bound to limit the discipline of the capital market.

46. The possibility of franchising Area Boards is sometimes discussed. The idea is that companies or consortia would be invited to bid for the right to distribute electricity in each area for a specified period of time (e.g. 15 years), using the assets (and personnel?) of the existing Area Boards. If the aim is to guard against monopoly power, the franchise has to be awarded to the company offering to distribute the electricity at the lowest price or profit. Once the franchise is awarded, it might be hoped that the company could be left unregulated until the completion of the franchise period, when a second auction would be held. Unfortunately, there are very serious difficulties with this approach, as Williamson has made clear. These difficulties revolve around the problems of designing and enforcing the appropriate contract. Williamson's conclusion is that franchising, far from being a "hands-off" solution, involves as much continual action as does regulation - or, put another way, that regulation can be thought of as a variant of franchising.

X COMPETITION IN DISTRIBUTION

47. This suggests that further thought be given to ways of increasing competition in the distribution of electricity - that is, competition for customers rather than merely for speculation. At the very least this will increase the effectiveness and reduce the burden of regulation, at best it may obviate the need for it.

48. The 1983 Energy Act removes the previous restriction on the generation or distribution of energy by persons other than an Electricity Board, and obliges the Area Boards to transmit electricity at cost (including a return on assets) between a private generator and his customer(s). At present this facility is somewhat of a dead letter, since supply by private generators is negligible. But suppose that the entire CEGB were restructured into several private generating companies, as proposed earlier. The 1983 Act becomes quite crucial, because it would allow any customer to purchase electricity direct, rather than from the Area Board in whose territory the customer resides. This possibility would not, in itself, provide a check on the efficiency of the Area Board, since the customer would have to reimburse the Area Board for transmission, but it would provide a check on monopoly pricing above the transmission costs.

49. Perhaps only large customers would initially find it worthwhile to buy direct from a generating company. But the principle could be extended to groups of adjacent consumers (e.g. businesses on an industrial estate or households in a particular street or neighbourhood). Indeed, it might be possible for non-adjacent customers to form a group to purchase power on more favourable terms than the Area Board offered. Trade associations might organise such groups, or electricity "brokers" might develop, specialising in a knowledge of

market conditions of both the supply and demand.

50. If whole areas (e.g. towns and villages) could in this way make direct contracts with generating companies, as an alternative to buying from the Area Board, it raises the question of whether one Area Board could offer to take over all or part of the local distribution network of an adjacent Area Board. In this way, the more efficient Area Boards could expand their territory at the expense of the less efficient Boards. Any licence issued to an Area Board should not restrict such a sale of distribution facilities, or specify the terms of sale (subject of course to license obligations continuing to be met). Any territorial sharing arrangements between Area Boards should be made subject to existing restrictive practices legislation. To go further, and give a local authority the <u>right</u> to change its Area Board, would be tantamount to introducing a franchise system (for the local way leaves). This has problems, as noted earlier, but may be worth considering.

51. Another check on the efficiency of Area Boards would be the possibility of by passing the Boards for all or part of the link between the generator and the customer. It follows that customers (or customer groups) should have direct access to the National Grid (above a minimum size, perhaps), and that independent transmission/distribution companies should be able to set up in competition with the Area Boards. Moreover, as far as possible the new entrants should be able to compete on an equal footing with the present incumbents. Area Boards enjoy various legal priviledges at the moment (e.g. rights to enter land for purposes of exploration, to expedite highway procedures, to purchase and dig up streets by ministerial authorisation, etc.). If new entrants could be given similar rights, this would

facilitate competition. Local authorities should be required not to discriminate with respect to pricing policies and rules of access (though of course the terms of access should be set high enough to prevent excessive digging up of streets).

52. This brings us finally to the structure of the Area Boards. The role of market forces is likely to be enhanced if there are more rather than fewer such Boards. Customers buying direct would have more choice of routes from generating companies, and municipalities would typically be closer to an adjacent potential substitute Board. Capial and labour markets would be improved. There would be greater variety of services and scope for innovation. It is not clear how many area boards would be appropriate. US evidence suggests that economies of scale with respect to geographical area are probably small. Each Area Board is presently subdivided for purposes of internal organisation - for example, the Midlands Electricity Board has 8 divisional offices (recently reduced from 26); South Eastern has 11. The Area Boards might thus be restructured in to about 100 division-sized companies. This is not entirely inconceivable - before nationalisation there were some 700 companies - but needs further investigation.

53. The retailing activities of the Area Boards have come in for some criticism in recent years, and there have been suggestions that these activities should be hived off. This would be a step towards privatisation, and would create more evenly-balanced competition in retailing than at present. Against this are the following considerations:

i) Retailing constitutes only a very small proportion of the Area Boards' activities (less than 1% by revenue). Hiving off retailing activities will therefore make only a negligible

contribution to privatising the electricity supply industry.

ii) The LEB's practice of subsidising retailing was found to be anti-competitive, but the MMC found no evidence of material harm to the market or the consumer.

iii) If the Area Board were restructured into smaller companies, any danger of material harm to the market or individual consumers would be even further reduced.

iv) If the Area Boards were privatised, and competition between them were strengthened, there would be very much less incentive for the Boards to subsidise their retailing activities.

v) In a market economy, there is a general presumption in favour of each company being allowed to pursue whatever activities it wishes to (within the framework of law and competition policy).

These considerations suggest that the restructuring and privatisation debate should not get sidetracked into the retailing issue, which is unlikely to constitute either a solution or a problem.

XI THE NATIONAL GRID

54. Under all of the restructures discussed above, the 400 kV National Grid would remain as a separate organisation. It would essentially comprise the transmission division of the CEGB plus the National Grid Control. The latter's role would initially be the same as at present. The transmission facilities of the CEGB are currently valued at £3272m., so this would be a very substantial organisation (greater asset value than British Steel or British Rail, for example). What form of ownership would be appropriate?

55. One possibility is that it should stay as a nationalised industry. This would alleviate the potential problem of monopoly and monopsony power which the National Grid would possess in the highest degree. However, it would leave the grid still subject to government constraints (e.g. on pricing and investment). It could provide an indirect means of implementing an "energy policy" intended to favour one fuel at the expense of another, or to redistribute income from one class or location of consumer to another. A nationalised organisation would be less responsive to changing technology and market conditions. Finally, there are all the problems of potential inefficiency referred to earlier.

56. Unrestricted private ownership seems to be rule out, because of the monopoly problem. But would it not be possible to envisage a Renters-type solution? Suppose the National Grid were made into a private company, with shares held by the other companies in the industry, both generating and distribution. A maximum limit on each shareholding would prevent any one company or group of companies gaining control. This would prevent a stock-market takeover, but the owners would have

the incentive to make the company operate efficiently. The spread of shareholding should ensure that no group of owners is able to manipulate the pricing or operating policy of the grid to its own advantage, or to the detriment of actual or potential competitors.

57. Ownership by the other electric companies would have the additional advantage that they could jointly determine the policy and role of the National Grid - for example, whether to continue operating as at present, or whether to switch to central scheduling and dispatch or to power brokering. If the National Grid were publicly owned, there is a danger of "the tail wagging the dog", with the Grid determining the structure and evolution of the entire electricity supply industry.

58. There is a further consideration. The present method of national grid control is eminently efficient with 7 area grid control centres, each responsible for both supply and demand. Suppose restructuring led to a dozen generating companies and two dozen distribution companies. Would the existing system of grid control still be optimal? It may be more advantageous for the grid to buy and sell on its own account. In any event, it will probably have to adopt a more active "entrepreneurial" role than at present. Private rather than public ownership is again indicated.

XII SPOT PRICING OF ELECTRICITY

59. There is a growing awareness that "spot pricing" of electricity is becoming technologically and commercially feasible. It seems worth asking what implications it will have for structure and ownership and what method of privatisation is likely to encourage the benefits it might bring.

60. Instead of the tariff containing two or three differing charging periods per day, which is set annually or less frequently, the price of electricity would vary minute by minute. It would be conveyed electronically to each customer's meter, which could be programmed to respond to the price (e.g. cutting off the deep freeze for a limited period when the price rises above a specified level), or the customer could respond directly. It is not entirely clear how the price is to be set: one possibility is that the electricity supply organisation would simply charge marginal cost at each moment in time. Another possibility is that there would be a national grid acting as a "market-maker", which would set the price to balance supply and demand at each moment in time, as in a spot market for commodities. The immediate benefits of spot pricing are two-fold: a finer reflection of marginal cost to consumers is likely to improve efficiency of resource allocation, and some expensive peaking plant may be reduced because cuts in demand will be a cheaper alternative.

61. It seems likely that spot pricing will reduce the importance hitherto attached to long run planning and security of supply, simply because there will not be additional ways of coping with (unexpected) peak demand. On the other hand, there will be a greater premium on altertness to temporary opportunities. Large customers work with self-generating facilities will find it more profitable to reduce consumption from

from the grid at various times, or even to switch from consuming to supplying. Entrepreneurs might find it profitable to build small power stations quickly in order to exploit (and thereby remedy) misshapen parts of the load curve, or a plant mix ill-suited to current demand conditions. This increased premium on entrepreneurial activity seems to indicate private ownership of more and smaller companies. It also suggests that the logic of combining generation and distribution, importance in the past, is now less compelling, and that joint companies may in fact hinder the development of a spot market for electricity. The development of spot pricing thus suggests changes which are consistent with the conclusion already reached above.

XIII SUMMARY AND CONCLUSIONS

62. There is increasing interest in restructuring the electricity supply industry, transferring all or part to private ownership, introducing regulation and encouraging competition.

63. While it is not held in such low esteem as many other nationalised industries, the electricity supply industry has been subject to a variety of criticism; the most serious of these probably concern the construction of generating plant by the CEGB but the Area Boards have not been immune to charges of inefficiency.

64. One proposal is to split the CEGB into its constituent generating regions, each of which would be combined with two or three Area Boards to form 5 joint power boards. The National Grid would remain a separate entity, with National Grid Control operating as at present. The argument is that increased efficiency would derive from decentralisation and competition in performance between these joint boards, and from eliminating duplication.

65. Power boards would not (as some might fear) lead to less co-ordination in investment. Efficiency in construction might be increased, but not beyond the efficiency of the Area Boards (which has been criticised), and the drastic increase in size may reduce the latter's efficiency even further. (The power boards as proposed would rank among the very largest UK companies by assets.)

66. An alternative proposal would be to form the CEGB's regions into independent generating companies without combining these with Area Boards. The National Grid and Grid Control could remain with minor modifications. This scheme requires less restructuring of the industry, and would secure the same advantages as the power boards

with the important added advantage of real competition between the generating companies.

67. A variant of the last proposal would be to form a new generating company for each power station or group of stations. Since we know very little about the "optimal" size or composition of a generating company, maximum flexibility should be allowed for subsequent regrouping and to this end the initial creation of more and smaller generating companies is indicated.

68. Privatisation will bring a variety of efficiency-related gains, in addition to the gains from restructuring, but may involve disadvantages with respect to monopoly and uneconomic services.

69. The benefits of privatisation will be greater in the case of independent generating companies than in the case of joint power boards because the latter scheme raises the danger of exploiting the distribution monopoly. The creation of independent generating companies would not require regulation, which the creation of power boards would, hence restructuring in the form of generating companies is more likely to facilitate privatisation.

70. Privatisation of Area Boards would increase their efficiency but raise problems of monopoly and uneconomic services. Profit regulation can treat these problems but may reduce competition and blunt the increase in efficiency. Franchising is a variant of regulation which would not overcome these difficulties.

71. The 1983 Energy Act, which requires the Electricity Boards to transmit power between private generators and customers, would have much greater significance if the CEGB were split into several generating companies. It would not provide a check on Area Board efficiency

but it would limit monopoly pricing. The transfer of territory between distribution companies should not be restricted. New independent distributors should be treated on equal footing with incumbents with respect to way leaves, etc. More and smaller rather than fewer and larger Area Boards are indicated. Hiving off the Area Boards retailing activities will not make a significant contribution to competition or privatisation.

72. Continued public ownership of the national grid involves the familiar disadvantages of nationalisationg. Most of the advantages of private ownership may be secured, and the dangers of monopoly and monopsony power prevented, by a "Reuters" solution in which the grid is jointly owned by generating and distribution companies.

73. Spot pricing of electricity, which will become increasingly economic in the future, puts a premium on entrepreneurial alertness, and indicates restructuring and privatisation along the lines already suggested.

74. To summarise, the present paper concludes that restructuring and privatisation of the UK electricity supply industry should take the following form:

(1) restructuring of the CEGB into at least 7 independent and privately-owned generating companies;

(2) privatising the 12 Area Boards, preferably restructuring them first into smaller units;

(3) instituting various measures to promote competition in electricity distribution;

(4) maintaining the National Grid and National Grid Control in substantially their present form, but owned jointly by the generating and distribution companies.