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# ***Regulation and Redistribution in Utilities***

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## **I. INTRODUCTION**

The consumption of utilities (for example, energy and water), along with that of other goods such as food, clothing, shelter, health and education, is often thought of as something that has particular distributional significance. This concern is reflected by the range of welfare and regulatory measures in place that are designed to guard against non-participation or under-consumption. The pricing of these goods illustrates well the conflicting arguments between economic efficiency and equity. The case for charging VAT on fuel, for example, is essentially an efficiency argument which points to the distortionary effects of a tax system that increases the prices of some goods (for example, double-glazing) and not of others (for example, domestic energy). The counter-argument is based upon notions of equity: that it is unfair to tax a necessity because the effects fall hardest on the living standards of poor households.

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Other matters of energy pricing policy, aside from those that, like VAT, are to do with the price level, are likewise subject to the competing claims of economic efficiency and equity. The structure of costs in the energy supply side is such that the marginal cost of providing and maintaining a connection to a premises, and providing customer services such as meter reading and billing, can be high relative to the marginal cost of supplying a therm of gas or a kilowatt-hour of electricity. A policy of moving the balance between standing charges and unit charges applied to domestic customers in line with generators' costs might be defended as a move toward a more efficient tariff structure, but it would have distributional consequences that, in the absence of some kind of redistributive framework, could have a serious effect on the living standards of poorer households that are, say, more difficult to supply. In the UK, governments have traditionally cared about the way in which the cost of utilities affects those on low incomes. Originally, the problem was seen as being one of pricing policy; more recently, with the privatisation of the large public utilities, the emphasis has shifted somewhat to income support measures.

In this paper, we discuss some of the influences that determine the relative prices a utility company charges to different groups of consumers for the use of its services. We argue that there are a number of influences, but regulators have often taken advantage of their position to distort prices in order to favour particular classes of customers. In doing so, they are often acting *ultra vires*, since such actions invariably go beyond the social duties of the regulator laid down in the relevant Act. Furthermore, we argue that in so far as regulators do seek to address distributional issues in their price-setting formulas, such attempts are inefficient compared with the use of the more direct tax and benefit system.

The plan of the paper is as follows. First, we discuss some of the reasons why regulators may distort prices. We then concentrate on the energy utilities and look at some empirical evidence specifically on the effects of the price of gas and electricity on different types of household. We show that energy pricing is a matter of distributional concern both in terms of its level and in terms of its structure. We then examine the various options available with which to tackle these distributional concerns — the distortion of prices by the regulators, the use of the tax and benefit system, and direct provision. Finally, we discuss the extent to which the regulators have any mandate to manipulate prices in this way.

## **II. A REVIEW OF PRICE DISCRIMINATION**

Regulated utility companies are bound by licences not to practise undue price discrimination. Of course, there are problems in determining what is meant by 'undue'. The competition case law in this area suggests that, in principle, prices

must bear a 'reasonable' relationship to costs,<sup>2</sup> but the precedent also implies that undue discrimination is a question of degree. Thus price discrimination could exist in principle but its extent might be negligible and therefore not 'undue'. The degree to which any particular instance of price discrimination will be regarded as undue is, therefore, still rather vague, particularly when the notion is applied in monopoly markets. Discriminatory behaviour is a matter addressed under general competition law when it excludes, or is designed to exclude, competition. In monopoly markets, characterising discrimination as 'undue' when it threatens the competitive process is meaningless, and other definitions need to be established.

In major network industries such as the regulated industries, it is very difficult to identify precisely the costs of serving even relatively large groups of customers, because of the scope available for allocating joint and common costs among customers. One might argue that a set of tariffs was discriminatory, and even exhibited cross-subsidy, if the revenue from each product or customer group did not fully recover its fully allocated costs. However, cross-subsidy logically should exist only when the deletion of one service benefits the users of other services, and therefore an economist would argue that cross-subsidy can only occur when prices lie outside the 'core' defined as the set of prices that is bounded from below by the incremental cost of production and from above by the stand-alone cost of production (see Faulhaber (1975) for a proof of this proposition). Whilst accepting that different prices within the core were discriminatory, the economist would only be concerned about this to the extent that relative price differences were designed to minimise the overall welfare loss of departing from marginal cost prices.

The licence conditions under which the regulated companies operate tend to suggest a policy in favour of cost-reflectiveness<sup>3</sup> based upon the fully allocated cost approach. Regulators have certainly regarded greater cost-reflectiveness in prices as desirable in principle. In law, the only obstacles to greater cost-reflectiveness are the statutory obligations that the regulators must ensure that the companies fulfil with respect to certain customer groups, mainly the elderly and disabled. The gas care plan, which offers free and frequent appliance checks to elderly and disabled users, is one example; British Telecom having to provide free emergency services to all users is another. All these people and services are being supplied at prices that imply a mark-up over costs that is not the same as for other people or services. The cost of provision of these social obligations is recouped from other services.

Aside from these duties, the regulators also have the power to instruct the companies to abandon the heavily cross-subsidised monopoly markets that they

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<sup>2</sup> See *South of Scotland Electricity Board v. British Oxygen Company* in 1959 for an example (1 WLR, at 592).

<sup>3</sup> For example, condition 17A.3(a)(i) of British Telecom's licence.

inherited at privatisation. No great inroads have been made in the domestic markets. In the energy and telecommunications industries, there have, of course, been changes in the balance of prices between very large consumer groups, such as between households and businesses in the energy market. The cross-subsidy that flowed from businesses to households when the gas and electricity industries were nationalised has ended as a result of introducing competition in the large-user markets. However, within the markets over which the regulator has explicit and formal control, the balance of prices has scarcely changed from the cross-subsidised structure that existed when the firms were nationalised.

Consider an example from the gas industry. Between the franchise market and the competitive market, tariffs are balanced in what appears to be a non-discriminatory way.<sup>4</sup> However, within the franchise market, there exists a uniform tariff irrespective of the consumer's load or location. Since some customers are more costly to serve than the average, there is obviously price discrimination, and probably even cross-subsidy, in the sense that some prices will lie outside the core.

One source of cross-subsidy is the current British Gas standing charge / volume charge mix which is £36.88 per year and 43.8 pence per therm. In its data supplied to the 1993 Monopolies and Mergers Commission investigation, British Gas estimated its supply costs alone to be £51.74 for the average customer of 650 therms. Not all of these costs are customer-related — a good assumption seems to be that a quarter are commodity-related and the rest are customer-related. This would imply a supply cost for each customer of £38.80. More recently, British Gas has engaged in a massive costing exercise of the transportation business (TransCo)<sup>5</sup> and has determined a fixed site cost per customer of £26.08 (see British Gas (1994)). The total cost per customer could, therefore, be of the order of about £65, with a volume charge of 39 pence per therm. Quite clearly, the difference between these estimates of the fixed and variable costs, and the fixed and variable charges, could imply a significant cross-subsidy from large to small users. At present, British Gas has the statutory right to rebalance its tariffs to a standing charge of £54 and a variable charge of 40.3 pence per therm, but it has declined to exercise this right, and OFGAS has not urged it to do so.

The second source of cross-subsidy lies within the supply costs themselves. According to evidence British Gas submitted to the 1994 Trade and Industry Select Committee investigation on domestic market liberalisation, some customers are more costly to serve than others. British Gas estimates that the administration cost of sending the bill, receiving the money and any further proceedings is about £10 per year for customers paying by direct debit and £100 per year for customers who go through all the procedures short of disconnection.

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<sup>4</sup> See Burns (1994).

<sup>5</sup> Described by Copley (1994).

The process of reflecting these costs began recently with the announcement that charges for those on direct debit would be cut.

The third source of cross-subsidy is the uniform tariff irrespective of location, which British Gas estimates to be 4 per cent either side of the average transportation charge (i.e. an 8 per cent spread) and OFGAS estimates to be 2 per cent either side (see OFGAS (1994)).

These cross-subsidies have remained in place in the eight years since gas privatisation, and the regulator has shown no enthusiasm for eliminating them whilst the market remained a statutory monopoly. However, from 1996 onwards, the cross-subsidies in the supply element of the business will begin to be eroded as a result of liberalisation of the domestic market. Thus we can expect discounts for prompt payers and customers who pay by direct debit to grow, whilst penalties for late payment will increase. An interesting issue that we do not address here is what will become of the current statutory obligations towards elderly and disabled users in the competitive market.

However, even though liberalisation will erode cross-subsidies in the domestic supply market, the regulator can still influence relative prices in the market by exerting her power over the single remaining monopolist, TransCo. This indeed is what she did in October 1994. As noted above, the British Gas costing exercise concluded that the fixed element of the site cost was £26.08, and also that the volume cost was 2.48 pence per therm. The fixed site cost derived from this costing exercise is significantly lower than earlier estimates (around £90 million was reclassified as a variable cost). OFGAS decreed that the fixed site charge should be £15 and the volume charge should be 4.19 pence per therm, and thereby perpetuated a large element of the cross-subsidy that flows from large to small users in the domestic market.

We must now ask ourselves why regulators would want to distort prices. A number of possibilities spring to mind: the first is that they are distorting prices in order to promote competition; the second is that they are promoting a sense of equity and fairness in the set of tariffs; the third is that they are captured by a particular group of customers and are engaging in a policy of what Posner (1971) called 'taxation by regulation', whereby cross-subsidisation between groups of users, sanctioned by the regulator, represents a form of taxation with the regulator acting as tax collector and redistributor. It is extremely difficult to disentangle these explanations, and of course the latter two cases will often be observationally equivalent, but except in certain specified cases, the regulator has no mandate to promote a sense of equity and fairness in tariffs.

The notion that the promotion of competition may require manipulation of prices is a persuasive one. In the telecommunications industry, for example, line rentals and connection charges are set at below average cost (and probably below marginal cost as well) and there is a low-user scheme in operation. Call charges, especially trunk and international charges, are correspondingly higher. Mercury Communications Ltd (MCL) is a major competitor to British Telecom,

especially in the long-distance and international call markets. There are arguments to suggest that prices and profits should be high in these markets to promote competition, and, since British Telecom must earn only normal profits, its prices and profits in other markets must be correspondingly lower. This is, however, only a partial explanation of the tariff structure. The period of fastest tariff rebalancing towards costs occurred up until 1989, but it has subsequently slowed, and indeed the price cap regulations in place until 1997 imply yet slower rebalancing towards cost. Yet, if anything, one would expect the opposite pattern to apply — slow rebalancing at first to establish Mercury, followed by faster rebalancing as it gains a market share. Furthermore, since 1991, cable operators are permitted to enter the market to offer local telecommunications services. They must compete, however, against British Telecom's local call charges and connection charges which are artificially low. Allowing British Telecom to rebalance its charges more quickly would benefit these operators and promote more entry into this market. Thus the theory that slow rebalancing exists to promote competition does not explain the current set of charges; indeed, rebalancing could have an ambiguous impact on competition, benefiting some competitors but harming others.

The other explanation for the low-user scheme and the cross-subsidised pricing structure is that OFTEL is practising a social policy of taxation by regulation. Whether slow rebalancing is a noble public interest objective or simply an indication of the political sensitivity of rebalancing is an interesting question. In 1991, Sir Bryan Carsberg defended his decision not to permit faster rebalancing, not on the grounds that competition for long-distance services might be adversely affected, or even because he was promoting a sense of equity in prices. He said:

At present, local prices are uneconomically low and long distance prices are too high. Altering the balance of these prices would increase the encouragement given to competition at the local level. However, such a change would also affect residential customers detrimentally, and vociferous objections would be likely to ensue.

This admission would tend to imply that rebalancing has been slow in order to appease 18 million households at the expense of a rather smaller number of business customers.

Returning to the gas industry, OFGAS has denied that the standing charge / variable charge mix implies a cross-subsidy because the standing charge is higher than the avoidable customer cost — as such, the price falls within the cost 'core'. Assuming that its calculations are correct, all the overheads of the business are now loaded on to the volume charge (the most price-elastic component) which is not efficient unless one believes that the elasticity of demand for participation is greater than the elasticity of demand for consumption — an unlikely proposition. This has the effect of creating a difference of £63.10

between the customer cost price paid by a 44-therm user and the customer cost price paid by a 1,550-therm user, to cover the costs of the meter, service pipe, safety and emergency services, which one would intuitively expect to be the same for all customers. One is left with the impression that in order to achieve the desired price, OFGAS has distorted the definition of costs. Further, one could note that the OFGAS / DTI joint consultation document, *Competition and Choice in the Gas Market*, made the point that customers must pay the full cost of the energy resources they consume, not the avoidable cost. So whether the mix exhibits cross-subsidy or not, the relative price regime is not particularly efficient, it violates government policy and the decision generates confusion with respect to future relative price determinations — will they be based upon fully allocated costs or avoidable costs? We can find two explanations for the regulator's decision to impose this set of relative prices. The first is that this is a measure designed to promote equity in a liberalised domestic market. The second is that it was a political act designed to smooth the introduction of competition in the domestic gas market which will subsequently be reversed.

The problem is that we do not know which of these explanations is correct. OFGAS has said that it selected a low standing charge to enhance prospects for competition. However, the Trade and Industry Select Committee has put down a marker on this issue and, in its final report (1994), called for an assurance from the government and OFGAS that the cross-subsidy would not be removed. It states that '... it would be unacceptable if, without this being made explicit, cross-subsidies were put in place simply to facilitate the transition to a competitive market, only to be removed subsequently'.

Some commentators<sup>6</sup> have argued that technically the cross-subsidisation could remain in place indefinitely, and that competition could continue to flourish. This may be feasible in electricity transmission, where the company does not engage in any other activities, and so long as it charges the same prices to all operators, it scarcely matters to the operators that the charges may be inefficient. However, when a company owns the network and can also supply a service over the network in competition with others, the situation is rather different and the competitors must rely on the regulator to ensure that the accounting separation between the network services and the potentially competitive activities is working effectively. Recently, the electricity regulator sounded out the possibility of structural separation of the electricity distribution and supply businesses of the regional electricity companies. In gas, the cross-subsidy in TransCo will limit the big price falls that would otherwise have been due to large domestic users and will therefore make them reluctant to switch suppliers — there will be fewer cherries to pick. After 1998, this may create a pressure from independent suppliers on OFGAS to remove the cross-subsidies in TransCo.

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<sup>6</sup> For example, Parker and Surrey (1994).

Recently, the Secretary of State gave some kind of assurance that 'there would be no point in changing the regime shortly after it had been introduced', but he conceded that 'the matter is subject in the end to the regulatory regime' (Gas Bill Parliamentary Debates, *Hansard*, 13 March 1995).

It is clear from the examples in the gas and telecommunications industries that there are a number of influences at work in determining relative prices, but what is somewhat unclear is the relative strength of each. We can observe that regulators have interfered in price structures and, in certain cases, it is pretty clear that the rationale is to favour particular classes of customer — the low-user scheme in telecommunications is an example, and there has been enough of a hint from the first Director General of Telecommunications that the inefficient pricing of access and calls has been in order to favour domestic customers. However, a lack of transparency exists with respect to the latest OFGAS determination on TransCo's prices, but it is likely that they have been set to minimise price variation (and the associated popular discontent) following liberalisation.

It may, of course, be desirable to manipulate utility prices for social ends. Although empirical evidence in telecommunications has put the welfare loss of inefficient prices at about £200 million per year (Attenborough, Foster and Sandbach, 1991), it is also the case that the impact on the distribution of income as a result of efficient pricing can be very significant. For example, the Social Policy Research Unit (1989) reports that gas consumption is strongly related to income, and therefore significant changes in the price of gas (or indeed of any other utility product) could have correspondingly significant implications for equity between groups. It is to these distributional issues that we now turn.

### **III. ENERGY CHARGES AND ENERGY CONSUMPTION IN THE DOMESTIC SECTOR**

In this section, we use data from the 1993 Family Expenditure Survey (FES) to illustrate the distributional significance of the consumption of energy. The FES is an annual survey of around 7,000 randomly selected households. It provides detailed information on household expenditures, incomes and demographics. We look at the patterns of spending on energy and also examine the pattern of spending allocated to fixed versus variable costs.

#### *1. The Level of Charges*

If the price of domestic energy matters, then it is because energy consumption is a matter of necessity to rich and poor alike. The notion that the individual should have access to a set of basic goods, sufficient to confer on that individual the

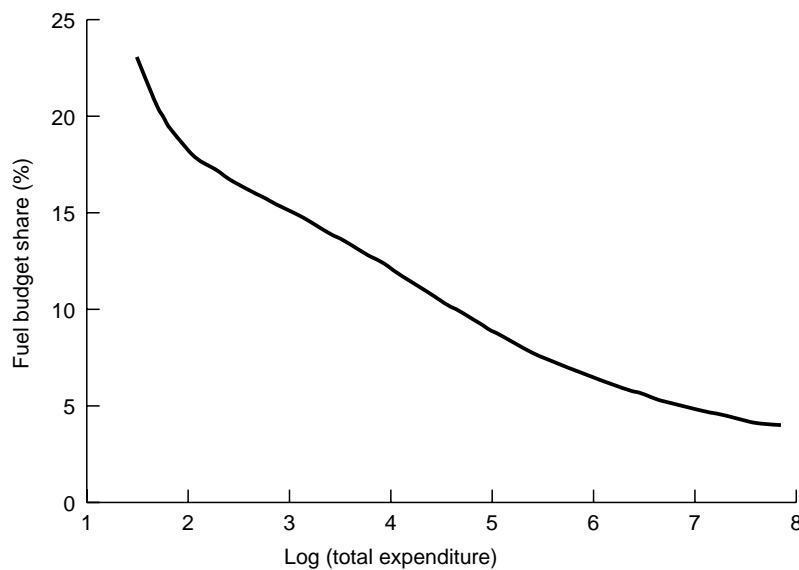


capability to achieve a minimum standard of living,<sup>7</sup> is widely accepted. Some goods are more important than others in this respect, while some are absolute requirements. These are generally considered absolute necessities, the need for which does not increase with household income or total expenditure.

The earliest studies of household budgets were conducted by Engel, 100 years ago.<sup>8</sup> He showed that household expenditure on necessities was relatively invariant to the level of total expenditure. That is, once basic needs are met, expenditure on necessities does not increase as quickly as the household's total spending. The result is that the proportion of total spending allocated to necessities falls as total household expenditure increases. This relationship, when graphed for a particular good, is known as the Engel curve. Figure 1 shows the Engel curve for domestic fuel, drawn using the 1993 FES.<sup>9</sup>

Figure 1 shows that the amount spent on fuels, expressed as a percentage of total household expenditure (the budget share), falls as (log) total expenditure increases. This is characteristic of many goods that are usually thought of as necessities, but is particularly clear for a good such as fuel in which quality choice by the household does not affect the direction of the relationship between

FIGURE 1  
**The Engel Curve for Domestic Energy**

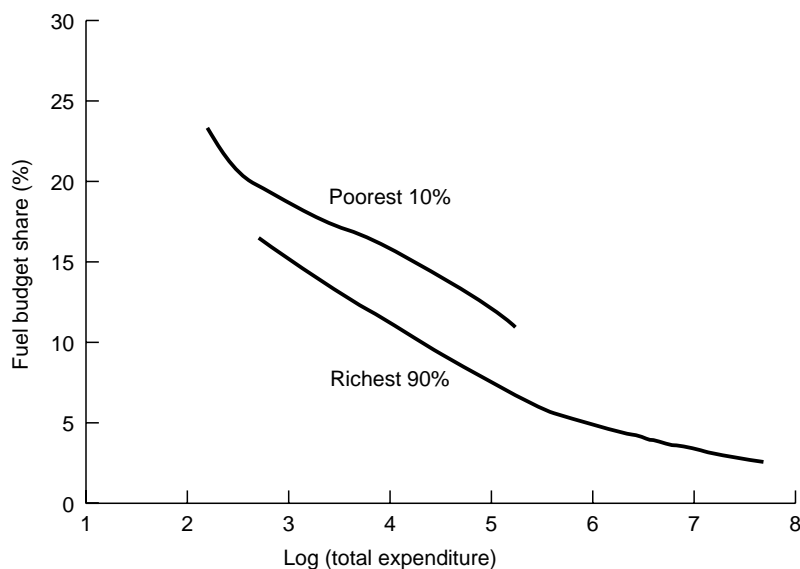


<sup>7</sup> See Sen (1992) for a discussion of the standard of living in terms of human functionings and capabilities.

<sup>8</sup> See Engel (1895).

<sup>9</sup> The Engel curves drawn in this section are non-parametric kernel regressions which do not impose any particular restrictions on the relationship between the fuel share and log total expenditure. See Hardle (1990).

FIGURE 2  
**The Engel Curve for Domestic Energy, by Income Group**



expenditure and consumption. Average energy spending as a proportion of total expenditure has been constant at around 5 per cent since the FES was first conducted in 1957.

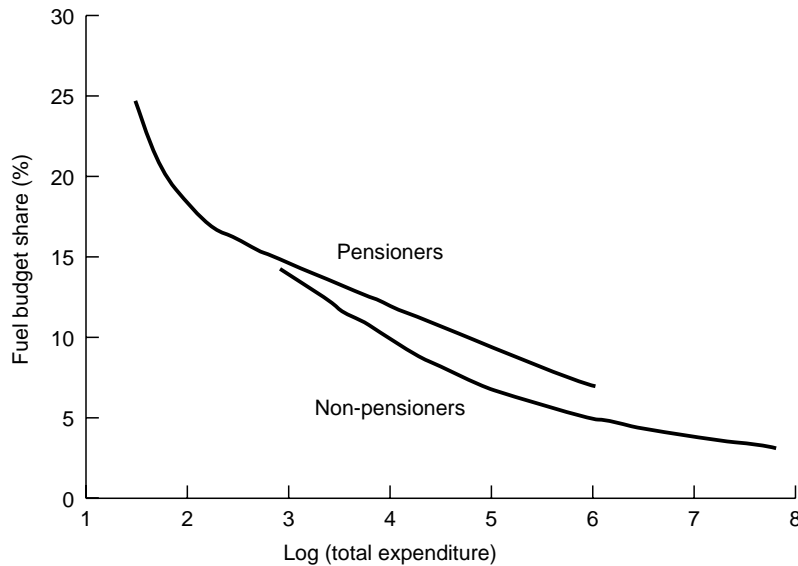
Figure 2 shows Engel curves calculated using the same data, but drawn separately for households in the bottom 10 per cent of the income distribution and the top 90 per cent. Since total expenditure is closely (and positively) correlated with household income, this shows that energy accounts for a larger part of the budgets of low-income households than of those of higher-income households, even conditional on an identical level of total expenditure.

Another important household characteristic that affects the Engel curve for fuel is age; even given the same income level, we would expect older households to have higher energy consumption than households of working age because they spend more time at home. Figure 3 shows the Engel curve for fuel, once again using the same data, but now with the sample split into pensioner and non-pensioner households. Pensioners tend to have higher fuel budget shares than other households.

Age and income are, of course, correlated. Very young and very old households tend to be poorer because they have just started work or they are no longer working. In Figure 4, we split our sample simultaneously by age and income to analyse the joint distribution of income, age and the budget share of fuel. This shows that, given age, fuel budget shares are higher for poorer

FIGURE 3

The Engel Curve for Domestic Energy: Pensioners and Non-Pensioners



households. They are highest for the oldest and poorest households, and lowest for the richest and youngest. The relationship between age and fuel budget shares, though, is not simply in one direction. Particularly among households in the bottom two income bands, fuel shares are lowest in the second and third age bands, not the first.

The shape of the Engel curve, and the way in which different households are located along it, have immediate implications for the way in which changes in energy costs will affect different households. If energy consumption were not a necessity and fuel expenditure increased in proportion to total expenditure, the Engel curve would be flat, and consequently changes in energy costs would affect the cost of living of all households equally. However, Figures 1 to 4 show that any given increase in the relative cost of energy will have a bigger effect on the cost of living of poorer and older households than it will on that of the younger and the better off. For example, in 1993, the average fuel budget share was 4.8 per cent. The average share for households in the bottom 20 per cent of the income distribution was 10.7 per cent. For households in the lowest income quintile in which the head of household was retired, it was 12.2 per cent. An increase in the relative cost of energy would increase the cost of living for the poor and the old by more than twice the average.

These effects are also compounded by other factors that affect energy consumption. These include the energy efficiency of the household's home. The FES does not contain useful information on the take-up of energy-efficiency

FIGURE 4  
**Fuel Budget Shares, by Age and Income**

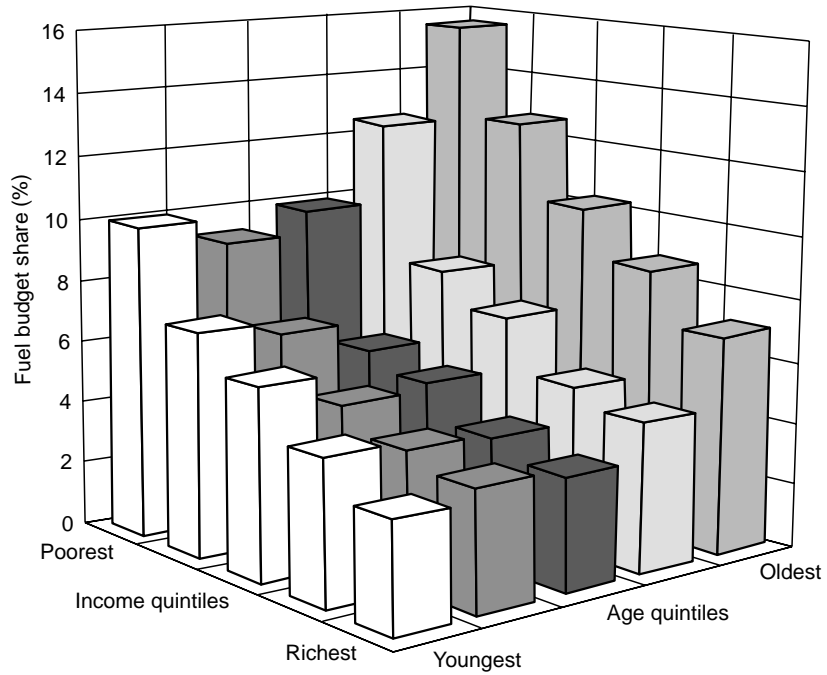
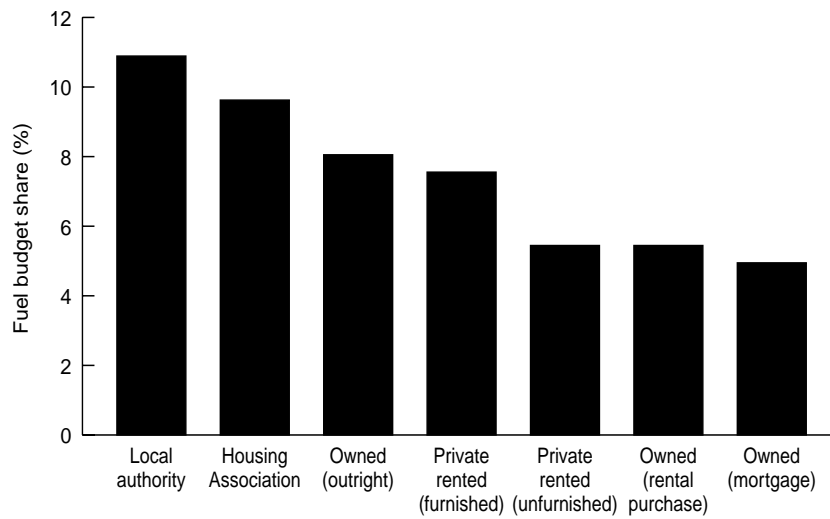


FIGURE 5  
**Fuel Budget Shares, by Tenure**



measures by households. However, work by Brechling and Smith (1994), which uses the English House Conditions Survey, shows that energy efficiency is lowest in the public rented sector and highest in owner-occupied housing. Figure 5 shows the average fuel shares by tenure type, once more using the 1993 FES.

Fuel budget shares are highest for households in local authority or Housing Association properties and lowest amongst households that are buying their homes. Tenure is obviously correlated with income and age. The high fuel share amongst households that own their homes outright may be largely to do with the fact that most of these households are elderly and therefore less likely to be working. It is, therefore, important not to ascribe these differences solely to differences in the fuel efficiency of accommodation associated with different tenures. However, Blundell, Pashardes and Weber (1993) and Baker and Blundell (1991) show that differences in tenure, given income and age, still account for significant variation in fuel budget shares.

## *2. The Tariff Structure*

So far, we have concentrated on the way in which the pattern of domestic energy demand has implications for the distributional effects of changes in the average level of charges. Changes in tariff structure will also have distinct distributional effects.

Since 1987, standing charges have increased at a faster rate than unit charges. Standing charges to domestic electricity consumers have increased by 47 per cent and unit charges by 40 per cent. Standing charges for domestic gas consumers have increased by 29 per cent and unit charges by around 20 per cent. Retail price inflation over the period was 38 per cent. Figures 6 and 7 show the joint distribution of age, income and the standing charge as a percentage of household electricity and gas expenditures respectively, using the 1993 FES.

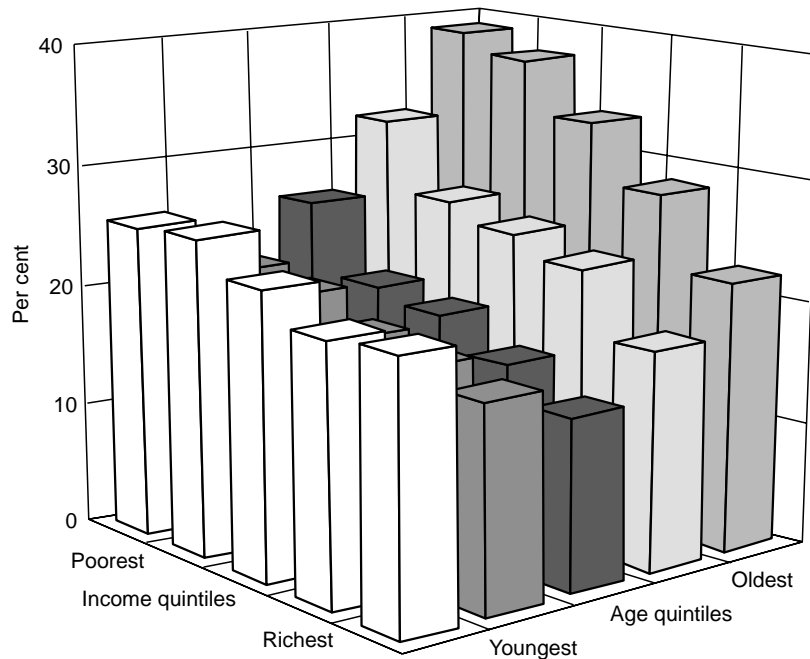
On average, standing charges account for nearly 40 per cent of spending on electricity by older and poorer households, and just over 25 per cent of gas spending by them. The lowest percentages are among the richest members of the middle age band, which is also the richest age-group. The lower percentages for gas reflect the propensity for gas customers to become gas customers because they consume more energy than average. The relative shift in the tariff structure over the last few years has therefore had a more pronounced effect on the living standards of the poorest and oldest households. These types of households are also among those least likely to be gas users<sup>10</sup> and so are less likely to have benefited from the slower increase in gas charges.

Flat-rate charges may be an efficient way of recovering the significant fixed costs of energy production and, as we noted in Section II, there is clear evidence for gas that the balance still has some way to go before the standing charge

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<sup>10</sup> See Baker and Blundell (1991).

FIGURE 6  
**Standing Charges as a Percentage of Average Electricity Spending,  
 by Age and Income**

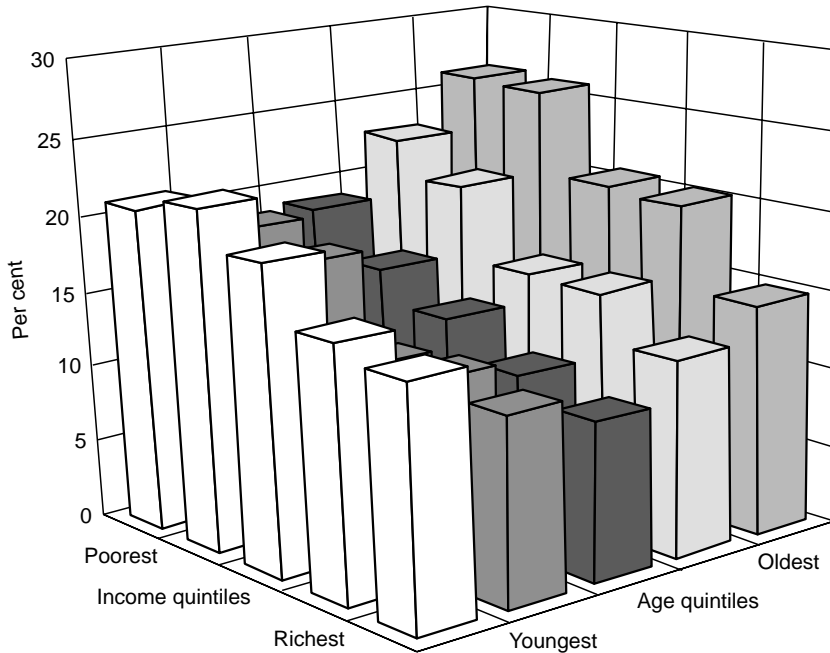


reaches its 'optimal' level. But a shift in the balance of energy charging from unit charges to standing charges would have distributional consequences that would in general penalise the less well off. Since energy consumption is manifestly something about which we have distributional concerns, we need to think how best to achieve any distributional aims we might have.

#### IV. COMPENSATION

The distributional objectives set in this country and elsewhere include provision for a minimum level of consumption of goods such as food, clothing, shelter, health care, education and energy. In some of these cases, the means of provision is the free availability of the good, as in the case of health care or education in the UK; in others, such as food in the US, some provision comes in the form of vouchers; and in yet others, such as food, clothing and most energy needs in the UK, the provision is expected to be met from the general social security benefit system. A final alternative is direct subsidy through distorting prices, either in a state-owned activity or through mandatory regulation of private enterprise, as has perhaps been the case in the energy sector in the UK.

FIGURE 7  
**Standing Charges as a Percentage of Average Gas Spending,  
 By Age and Income**



As already noted, the bulk of the consumption of energy for low-income households in this country is expected to be covered by the general provision of social security benefits such as income support, family credit and retirement pensions. In addition, special cold weather payments are available to certain benefit recipients during abnormally cold weather.<sup>11</sup> But there is also evidence that the balance of charges between standing charges and charges per unit of consumption has in the past been set so as to assist small consumers, rather than at a level that was more likely to achieve purely economic efficiency. Recent years have seen a shift in this, towards higher standing charges, which has the distributional consequences described earlier. It seems reasonable to expect this to continue. If we wish to respond in some way, there are three obvious routes: regulate providers to ensure that the shift in pricing goes no further or is reversed; increase general social security benefits; or provide energy directly for some groups. We consider each of these below.

It is worth noting that it is not only in explicit pricing policy that distributional objectives can play a part. In the case of utilities such as telecommunications or energy, charges for connection can also be an issue.

<sup>11</sup> See Child Poverty Action Group (1994) for a detailed description of the system.

Enforcing 'free' connection, or connection for the same charge regardless of cost, will cross-subsidise from those who are easily connected to those in outlying areas, and encourages new entrants to locate in regions or parts of regions with few difficult-to-connect customers. Making connection available to all is a redistributive aim, not part of a policy to enhance efficiency.

### *1. Regulation to Achieve Distributional Goals*

The natural response to distributional concerns springing from altered pricing policies by a private sector monopoly or quasi-monopoly is simply not to allow such changes or to insist that they are not applied to vulnerable groups. But we would argue that such a response confuses the achievement of economic efficiency with the achievement of distributional objectives.

That efficiency and equity are frequently inconsistent is a commonplace of economic analysis, but often too little thought is given to the appropriate way of achieving 'equity'. We have a social security system and a tax system so as to achieve distributional ends, and we should be very wary of any suggestion that we use other mechanisms to achieve those ends, since they will in general be less suited to the task. The temptation to use a single tool to achieve many aims is common, but should be resisted. The principal aim of a regulatory mechanism applied to a private sector monopoly is to improve the efficiency of the outcome for price and output. If the distributional consequences of such an outcome are of concern, the sensible thing to do is to tackle those distributional problems openly and directly through the tax and transfer system.

Any attempt to redistribute through regulation will typically be just as costly in economic terms as redistribution by taxes and benefits, and almost certainly more costly, and will be less clear. If the same help to those on low incomes or in distant regions is to be achieved, either (i) profits must be lower, redistributing from shareholders and making investment in the industry less attractive, or (ii) if

the companies are not profit maximising *ex ante* and they seek to maintain their previous profits, prices for others must be higher, redistributing from other consumers and driving a wedge between the cost of production and the price of consumption. The same amount of redistribution is occurring as if run by direct transfer payments, but the losers are determined by the producer and the regulator, rather than by government. And by distorting both investment and consumption and production decisions, the economy suffers. While it is true that there would also be a distorting effect from any general taxes imposed to pay for direct help, this should be smaller, since the taxes would be imposed deliberately and after due consideration. It is also worth noting that regulators will typically have less, and less useful, information than direct tax or social security administrators if the aim is to target those on low incomes. While low levels of consumption may be correlated with need, the correlation will not be perfect: some low users will have high incomes, and vice versa.



A second problem encountered in using regulation to achieve social objectives concerns accountability. If regulators are to manipulate prices to favour certain classes of customers, then their actions must have legitimacy. The framework of regulation that was established with the privatisation of British Telecom did not consider regulation from a social perspective. This is not surprising. Foster (1992) provides an absorbing account of the regulation of utilities over the last century or more, which illustrates, among other things, how continued intervention into the running of enterprises in the name of the 'public good' eventually compromised the efficiency of the enterprises. In addition, the political mood at the time of the major privatisations saw the industries as wealth creators, not instruments of social policy. Thus the social provisions put upon the privatised utilities were pretty minimal. Common to all the Acts that privatised the companies are obligations to supply all reasonable demands — the universal service obligation — and there are also some ad hoc requirements placed upon the companies. To begin with, the regulators themselves saw their role as being simply economic. In his first annual report (OFTEL, 1985), the Director General of Telecommunications (DGT) clearly sets out his role:

I should make it clear that I do not think that it would be appropriate for me to seek to impose a balance of prices in a way that was motivated primarily by a desire to achieve some particular redistribution of income amongst members of the community, nor do I think my powers would permit me to do this.... I do not believe, for example, that I could properly put forward a proposal for a rule that all people on low incomes should be given telephones free of rentals; such a proposal would involve arbitrary judgements about matters of income redistribution and my making it would involve the usurping of the proper role of government.

Of course, in practice, all the regulators, including the DGT, have taken into account the social impact of relative price movements, a point recently acknowledged by the electricity regulator, Stephen Littlechild, who said at a recent conference that regulators do have a social concern, which influences regulatory policy.<sup>12</sup>

There is a set of criteria a regulatory agency of any sort must fulfil if it is to be 'legitimate', and it is summarised by Baldwin and McCrudden (1987). The regulator should have a legislative mandate, be accountable, follow due process, have expertise and be efficient, both in the running of the office and in making decisions that lead to efficient outcomes.

Regulators have very little legitimacy in manipulating tariffs for social ends — there is certainly no explicit mandate for redistributive regulatory policy except in a couple of well-defined cases (such as protection of the elderly and

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<sup>12</sup> FOXERA conference, 28 September 1995.

disabled). Where any authority may exist legitimately, it is where such activity can be justified under the discretion allowed for the regulator in interpreting his duties. Regulators are able to promote relative price regimes that are unduly discriminatory in an economic sense because, as we argued above, there is no fully worked-out legal notion of what ‘undue discrimination’ means in a monopoly market. The definition of the universal service obligation is left deliberately vague and regulators are able to make their own interpretations. In telecommunications, the universal service provision could permit the company to offer cheap tariffs to low-income users, but it is less clear that this duty would justify the rest of the tariff structure. In gas, the provision is qualified by ‘so far as it is economical’ to provide universal service and so provides a rather weaker case for active intervention. In water, the case for intervention is also rather weak, given that the primary duty is simply to secure that functions are properly carried out in every area in England and Wales, though there is a duty to protect the interests of every customer which could be interpreted to justify social intervention. Electricity contains a very general duty to secure that all reasonable demands for electricity are satisfied. An objective reading of the law would appear to limit the use of cross-subsidy to achieve these goals. Whilst the regulator is still accountable to the Secretaries of State, those ministers are not responsible for ensuring compliance with a non-existent mandate, and the regulators are still less accountable to those who bear the ‘taxes’. The regulators themselves have not consulted widely on the redistributive aspects of their policies, and little information is in the public domain to assess the extent of the redistribution (OFWAT excepted). Whilst the regulators may be expert in economic regulation of companies, it is unlikely they are expert in taxation theory and practice; and by pursuing a social agenda, the regulators can be criticised for not making economically efficient decisions.

What may be required to offer the regulators legitimacy is a duty to have regard to the equity implications of tariff rebalancing in monopoly enterprises, or else pass the most contentious issues back to the elected government. The deliberate use of regulation to achieve distributional goals is likely to be costly to the economy, and risks being ineffective as producers strive to avoid its intentions. Furthermore, at present, regulators generally have little or no mandate to act in these matters. There are more direct ways of achieving these goals which should be more effective and less distortionary and have the added merit of being transparent.

## *2. Social Security Benefits*

As we have argued above, the natural response to distributional concerns is to use the social security and tax system to provide low-income households with enough money to consume adequate amounts of goods such as energy. That is

the route we take for commodities such as food, clothing and transport, but there are some special characteristics of energy consumption that add complications.

First, while providing money will be the optimal route where consumers are fully informed and fully rational, it will not necessarily be where they are not. In the case of energy, lack of information or understanding about the price of energy or the appropriate level of consumption can certainly lead to market failure, of which deaths from hypothermia are the clearest and most awful example. Since the group for whom energy costs are highest as a share of their spending is the poor and old, concerns about information failure are very real.

A second potential problem relates to uprating. In general in this country, social security benefits are uprated in line with the general retail price index. To the extent that the consumption patterns of those on low income are systematically different from the population mean as represented in the RPI, the uprating may be inappropriate, as would have been the case when VAT was imposed on domestic energy — special compensation to account for this was paid.<sup>13</sup> The best way to get around this problem may be to develop cost-of-living indices for particular social groups whose consumption patterns may differ significantly from the average.

The third problem with using general social security benefits is that since energy is consumed not for its own sake but for heating, cooking and lighting, the amount of energy needed will vary with the quality of the available equipment and the house to be heated. Both equipment and house quality are highly variable, so the standard social security problem exists of either paying higher-than-necessary benefits to many to protect a few or paying inadequate benefits to those with specially high needs. There is also an incentive problem to do with paying households cash to improve the quality of their household equipment. Direct provision may be a way of partially getting around this.

### *3. Direct Provision*

One response to the problem of information failure is to propose direct provision, either through vouchers or by setting standing charges to zero, or perhaps through the use of low-user schemes. For the reasons discussed earlier, any such schemes should be funded directly by government rather than by providers. And the problem of identifying those who are truly needy remains; not all elderly people are poor; nor are all low users deserving of help: some may simply have very fuel-efficient homes or low demands for energy. However, direct provision has an advantage over cash transfers. Blackorby and Donaldson (1988) point out the problem of households having an increased incentive to present themselves as in need of help with energy costs when they are not, in

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<sup>13</sup> See Crawford, Smith and Webb (1993) and Crawford (1994) for further discussion.

order to receive cash transfers, whereas if transfers were in kind, this incentive would not exist.

A second kind of direct provision relates to the type of connection charge discussed above. If a decision is taken that all should have access at the same price to a service or that at least some help should be given to the isolated, the most efficient way of achieving this is for government to pay directly to the provider any amount over the cost for connection in a standard case. Such a policy requires schedules of cost per mile of gas pipe or electricity cable or optical fibre, but it should be possible to construct such schedules.

## V. CONCLUSION

Energy consumption is quite appropriately something over which we have distributional concerns. We have shown that it forms a large share of the budgets of the poor, and that both the level of charges and the precise nature of the charging structure can have significant distributional effects. Whether equity considerations can explicitly be cited within the existing legislative structure, or whether amendments would have to be made, the case remains that greater transparency of relative price regulation is required. It is of great importance that consumers, the incumbent firms and the new entrants get some indication from the regulator of whether the cross-subsidies that currently exist are measures to promote equity — in which case, they can be regarded as a permanent feature of the landscape — or are simply in place to smooth the introduction of competition or to promote certain competitors. If explicit social objectives were to be incorporated into the framework of regulation, then transparency would be improved and it could be made clear where the compromise between allocative efficiency and equity is made. We have argued, however, that the distributional significance of energy requires not that regulators and regulated industry should carry redistributive duties, but that we should be clear about redistributive aims and achieve them through direct government tax and transfer activity. Direct action is measurable, visible, accountable and effective. Attempting to regulate to achieve the same goals will be less effective, less accountable, less visible, less measurable and more costly.

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