

WATER CHARGING AND SOCIAL JUSTICE

Why politicians must act

Edited by Guy Palmer

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FOREWORD

Jim McAuslan, Deputy General Secretary, Public and Commercial Services Union

Why should poorer households pay relatively more for their water than richer households? What can politicians do to address this unfairness with regard to our most precious of resources? These are the critical questions raised in this pamphlet. They are at the heart of any considerations of social justice and a progressive approach to water charging.

My view is that the way forward is to legislate to replace rateable values as the basis for water charging by a system based on Council Tax bands.

Over 80% of households in England and Wales still pay for their water on the basis of rateable values, last updated in the early 1970s. This data is very out of date and contains many anomalies. Yet, despite voluntary moves towards water metering which will widen water charging inequities, this system seems destined to remain in place for the majority of the population for at least the next 25 years, if not considerably longer.

But, however imperfect, the old rating system had the merit of charging people crudely according to their ability to pay – explaining of course, Mrs Thatcher’s desire to get rid of the system for the purposes of local taxation and the introduction of the ill-fated Poll Tax.

The current system of Council Tax bands is far from perfect. The general case for reforming the Council Tax was argued last year by the New Policy Institute, in a sister paper to this publication. In particular, the relative difference between what poorer, smaller households pay and what larger, rich ones pay should be much greater than it is at present. By legislating to replace rates by a somewhat reformed Council Tax and establishing that as a basis for water charging, politicians could ensure that a progressive charging system for this, our most important utility, is retained for the 21st century.

The papers in the collection of essays in the pamphlet consider the pros and cons of moving to a different system of water charging. They do not play down the practical difficulties involved. But they do emphasise the opportunity, and indeed responsibility, that politicians have to act to ensure that progressive principles are applied and brought up to date.

INTRODUCTION

Guy Palmer

Over 80% of households in England and Wales are still charged for their water based on the rateable value of their property: people in bigger houses pay more, and charges are independent of usage. But the other 20% of households - those who are metered - are charged on the basis of how much water they use, independent of the nature of their property. It is this sharp difference in charging structures, without any apparent philosophical basis or overt plan, that first brought the subject of water charging to our attention at the New Policy Institute.

And the plot thickens: rateable values have not been changed for almost 30 years,¹ and are no longer used for any purpose other than water charging; on current progress, it will take another 25 years before a majority of households are metered; domestic consumption rises each year, but supply is fixed; and prices have risen each year for the last 15 years as ever more investment is made in environmental improvements. What all parties to the debate do agree on is that the current situation is a right old mess!

At one level, all the papers in this pamphlet are about the potential application of Council Tax bands to future water tariff structures, the motivation being to modernise whilst still retaining some element of the progressivity in charging structure. But, at another level, the papers are about how to combine market efficiency with social justice, and the role of government in setting the framework for utility pricing. Thus the material is of relevance to anyone thinking about policy development in the social justice arena, as well as those interested in the particular subject of water.

Some basic principles

Before turning to the papers, I would like to establish a few basic principles. First, whilst there is clearly some relationship between metering and tariff structures (e.g. it is obviously difficult to have volumetric charging for unmetered households), they are essentially two distinct, and somewhat separate, subjects. For example, tariff structures which contain some element of ability to pay are perfectly possible in a metered scenario and, vice versa, it would be the height of simplicity to replace the current rateable value-based tariff for unmetered households with a single, flat charge.

Second, economic theories of pricing do *not* dictate that everyone should be charged the same nor that costs should be proportional to usage. What economic theory does suggest is that usage at the margin (i.e. at high levels of consumption) should be priced roughly according to the marginal cost.

Finally, the current situation is clearly not stable. If consumers have a choice between two options which are identical apart from their cost, they will inevitably move towards the cheaper option, even if this takes some time to happen. So, on current tariff structures, it will be the high rateable, low usage consumers of water who are attracted to metering. As they save money, the low rateable, higher usage consumers (e.g. poor families with children) will inevitably have to pay more to make up the difference.

Now to the papers, which address two main questions: a) is it important to retain a progressive charging structure for water and b) if so, how can this be achieved.

Is it important to retain a progressive charging structure?

In their respective papers, both Peter Kenway and Keith Harris firmly conclude that the answer to this question is ‘yes’.

Peter’s case is centred on the notion of social justice. Whereas the predominant notion of social justice across the regulated industries is a narrow one, based on vulnerable groups, the reality of the notion embodied in the unmetered water tariffs is a much broader view of social justice, with payment according to means. He argues that the broader view is valuable, and demonstrates that it does not conflict with economic principles. Its retention or otherwise is therefore not just a technical matter and requires political intervention. He then discusses the government’s position, where it is clear that they are concerned about “fairness and affordability” but much less clear what they are actually going to do about it.

Interestingly, Keith, a senior manager in a major water company, almost takes the case for some element of social justice in the charging structure as read. He points out that, whilst it is important to have a price disincentive for high volume users, there is no such imperative for the majority, and thus that costs have to be determined on some other basis, with a range of choices for obtaining the required levels of revenue.

How can a progressive charging structure be retained?

All the contributors agree that, strategically, it does not make sense to reform the current unmetered tariff unless something is also done about the metered tariff.

By way of a series of practical examples, Peter Vass illustrates what would happen: first, the high rateable value, low usage consumers would move to metering (as they are already doing) to save money; as a consequence, the average bill for unmetered consumers has to rise to maintain total revenues; this creates a greater incentive for more people to move to metering, which in turn raises the bills for the unmetered consumers again. Whilst it is not clear how long this process will take, it is clear that the low rateable value, high usage consumers (e.g. poor families with children) lose out substantially. Even if protection for vulnerable groups is introduced, the end result is still much more regressive than the current situation.

In this context, the papers by Janet Wright and Keith Harris both provide a number of practical proposals for future tariffs based on Council Tax bands. None of these are based on a straightforward switch from rateable value to Council Tax: as Janet's analysis shows, such a scenario would be both regressive compared to the current situation and involve significant incidence effects (i.e. many 'losers'). Rather, the preferred options centre on having a higher ratio between what the top band property pays and what a bottom band property pays than that which applies to the Council Tax itself.

Whilst the preferred options are both practical and progressive, they still involve incidence effects. But, the overall reduction in prices that is now in prospect presents an opportunity to overcome this to the extent that the losers only need to lose in the sense of not sharing in this reduction.

Some more general reflections

Of course, the reasons for the current predominant tariff are historical – water used to be provided by local authorities – but the end result is unique – in no other industry is ability to pay at the core of pricing policy. It is this which makes the subject of water charging so important: if a government interested in social exclusion cannot act decisively to retain some element of differential charging in an industry where the principle is widely accepted by both consumers and providers, what hope is there of such a principle even seeing the light of day in any other industry subject to price regulation?

On the other hand, if stable, strategic and progressive tariffs are introduced in the water industry, then a whole panoply of possibilities begin to emerge. For example, why shouldn't the television licence fee differ according to ability to pay?

Second, it is clear that the Council Tax, as currently configured, is arbitrary to an extreme: whilst the principles of both rateable value (proportional to property prices) and the poll tax (same for everyone) are at least clear, the ratios between Council Tax bands were simply a matter of political choice. If the current ratios were judged suitable by a government of the right, why should not a more progressive government look at them again, with a view to increasing them?

Finally, is it time for a proper review of the regulatory process, and the respective role of the regulators and government in particular? Whilst their deliberations may be thought largely technical, and thus public visibility and accountability is low, the regulators are actually working in highly political areas where the economic principles are much less clear, and much less pervasive, than most people think.

¹ Between 1973 and 1990 some properties' rateable valuations would have been changed either if the property itself were significantly modified or if its immediate environment altered such as to affect its rental value.

SETTING THE PRINCIPLES: WHY POLITICIANS CAN MAKE A DIFFERENCE TO WATER CHARGING

Peter Kenway, New Policy Institute

This paper argues that the debate about the future basis for water charging is being overly dominated by the technicians with too little involvement from the politicians. 'Ability to pay' is a perfectly valid principle for pricing and does not conflict with economic principles. What it does conflict with is the 'common sense principle' that payment should be proportional to usage. Politicians have every right, and indeed a duty, to provide the lead on which principle should be given priority. If social justice considerations are viewed as important, then it is perfectly possible to devise a progressive tariff structure, based on Council Tax bands.

The political consequences of apolitical regulators

The rules governing the amount that households can be charged for water until 2005 were published by the industry's regulator, OFWAT, in November.¹ It is fair to say that this document did not attract much attention from either the media or the politicians. This is true of almost everything that is produced by the ever-growing pantheon of regulators. Of course, their pronouncements are vital to the industries they control and, to that extent, what the regulators decide is widely understood to be important. Yet because regulation is the province of lawyers, economists and accountants, their deliberations may be thought to be essentially technical rather than political, thereby exciting little attention beyond a quite narrow range of specialists.

But as the recent paper from OFWAT shows, the apparently technical exercise of regulation can yield outcomes with strong implications for the distribution of charges between households. It therefore has political significance. For example:

- The plans for water charges up to 2005 are to the clear disadvantage of families with children, and to poorer families with children in particular. This is because larger households, especially poorer ones, are likely to pay for their water on an unmeasured (non-metered) basis. OFWAT expects unmeasured bills to have risen by 6½% (£16 a year) compared with average bills over the next five years.²

- The basis on which water charges for still more than 80% of households depend is now almost 30 years old. There are no plans for their replacement or revision in the foreseeable future. As time passes, so these charges inevitably become more arbitrary and thus more unfair.
- In 2000/1, water bills are to fall on average by 13%.³ If this cut had been brought in simultaneously with a switch from rateable values to Council Tax as the basis of unmeasured bills, it would have cushioned the losers from that reform. As it is, an opportunity to modernise the charging basis that would have been politically acceptable has been lost.

The crux of the matter is social justice

The question I want to address in this paper is whether politicians who are unhappy with such outcomes can realistically do anything about them. Are these outcomes the timeless and unvarying workings out of law, economics and accountancy - in which case politicians can do very little? Or are they, instead, the consequences of applying these technical fields of knowledge within a particular and potentially varying framework of values – in which case politicians, as purveyors and promoters of values, may be able to do quite a lot?

The firm conclusion of this paper is that the answer is the latter and thus that politicians as politicians can do something. Positively, I find signs in what the DETR has written on water charges over the past two years of the political beginning to re-assert its ascendancy over the technical. That has had little or no impact on the regulator's most recent decisions, but the prospects for the future might be more promising.

In my view, the key both to the problems with the unsatisfactory outcomes noted above, as well as to the more general question of how politicians can effectively intervene, centres on the notion of social justice. More specifically, how far and in what form should 'social considerations' or 'considerations of social justice' be applied to charging systems for household-based services such as water?

A narrow view of social justice: dealing with ‘special cases’

It seems to me that not just in water, but across the whole spectrum of regulated industries, the pre-dominant notion of social justice is currently a narrow one, focusing on what can be called *households with special needs* or alternatively, *vulnerable groups*.

A clear expression of who this might include and how they might be helped can be found in the original consultation paper on water charging, published by the DETR in spring 1998:

“Certain households, particularly those with low incomes, will find water bills a particular burden. The Government believes that a range of payment options and other rights should be available to ease the difficulties faced by such households, including: a choice of frequent payment options (e.g. weekly/fortnightly) without extra cost to the customer; and the development by all companies of charitable trusts, to channel a small fraction of turnover to help genuine hard cases.

Particular problems can arise where households on low incomes, particularly large families and people with special medical needs, live in homes with a metered supply. We propose that such groups should be given a new right to opt for a charge based on average household use, rather than their actual meter reading, if they wish to do so. This will protect vulnerable customers from high bills because of an unavoidably high use of water ... If those responding to consultation can identify other groups of customers who deserve such assistance, we should be happy to consider representations in favour of extending this concession.”⁴

Apart from the rather unfortunate reference to the use of charity as a possible means of helping ‘genuine hard cases’, there is nothing in this that anyone would find objectionable. The question, though, is whether what is being expressed is the full extent of the concept of social justice as far as charges are concerned, or merely the start.

What has to be borne in mind here is the extent of the problem of low income, and therefore need, that exists in this country. On one of the government’s own choices of poverty line, a quarter of the population – some 14 million people – had incomes below the poverty line in 1997/8;⁵ and, of course, need does not cease as soon as one slips above that threshold.⁶

In these circumstances, no formula based on a narrow view of social justice, whether ‘special needs’ or ‘vulnerable groups’, can possibly satisfy. To use such a formula makes it almost inevitable that regulatory decisions will lead to adverse outcomes for those groups within the population whose interests the government is in other ways seeking to advance (for example, those of low-paid families, via the Working Families Tax Credit).

A broader view of social justice: payment according to means

If a narrow view of social justice finds expression in the form of special measures for those ‘genuinely’ in need, what form would a broad view take? An extreme answer must be in the shape of the charging system itself.

The leading instance of a charging system that reflects a broad notion of social justice in this way is one that is based on some measure of an individual’s, or a household’s, ability to pay. In complete contrast to ‘special measures’, ‘payment according to one’s means’ embodies a universal application of social justice. This not altogether revolutionary principle is the basis of almost all of our tax system, including income tax and council tax.

The crucial thing about water is that, unlike any other utility, charges for the majority still vary according to household means and will continue to do so in the foreseeable future. Water charging for the majority still therefore embodies and exemplifies a broad principle of social justice – which is one of the main reasons why the otherwise rather dry subject of water charging merits political attention.

One important contrast between the narrow and the broad conception of social justice is that whereas the narrow conception can in principle be attached to almost any charging system – for example when the charge is uniform, as with the television licence, or rising with consumption, as with water paid for on a measured basis – the broad conception cannot, since it seeks to mould the very charging system itself. This inevitably brings the latter into conflict with other conceptions of how the charging scheme should be structured.

Other than ‘ability to pay’, the most obvious principle on which to build a charging system is that a household should pay for water as it pays for milk, that is by the litre. There is nothing exceptional in this, although given that it is the newer principle on which still only a minority of households pay for their water, one might have thought that the older, majority principle might still at least be recognised for what it was and is. Yet looking at the DETR, this time in its response to the 1998 consultation, that is not what we find:

“The consultation document asked whether there were other vulnerable groups that should be similarly protected. None were suggested, although some responses to the consultation document suggested more general support, for example by offering assistance in paying their bills to all those in receipt of benefit. It is not the purpose of the water charging system to act as a re-distributive measure, although the Government recognises that there is an element of cross-subsidy between users under the current charging arrangements.”⁷

Instead of acknowledging the current charging arrangements for what they are, they are presented as a defective (because entailing cross-subsidy) version of a ‘proper’ cost-based system. And while it is true that the *purpose* of the charging system is hardly to achieve re-distribution, it is a long-established principle in market economies that goods and services can be paid for in a tax-like way, even though that *looks* like re-distribution when compared with what each would pay if they paid exactly for what they used.

Consequences of the failure to acknowledge the broader view

The failure on the part of government and regulator to recognise that our current water charging system embodies two principles – means-related for those on unmeasured charges and cost-related for those with meters – rather than just one, has considerable consequences.

First, it lies at the root of the failure to modernise the basis for unmeasured charges. The natural successor to the household’s rateable value is the band into which it has been placed for the purpose of its Council Tax liability.

This might not have mattered if metering, supported a cost-reflective tariff, had spread much more rapidly than it has – or indeed is expected to do. But even by 2005, OFWAT is still assuming that the percentage of households paying on an unmeasured basis will have fallen from 82% to just under 75%.⁸ At that rate, it will be 2025 before even a bare majority of households will be paying for water on a measured basis, by which time rateable values will be more than 50 years old. It must be absurd to charge for anything on a basis so old.

Second, switching from ‘ability to pay’ to ‘payment according to usage’ involves re-distribution but in an *adverse* direction, especially from the viewpoint of poorer, larger households (families with children). That point is obscured if one presents the unmeasured basis (as the quotation from the DETR above did) as a defective version of the cost-based system. In that case, it appears as a mere technical matter, centering on cross-subsidy, about which politicians (as well as other non-experts) can say nothing.

But once it is recognised that two competing *principles* are involved, the politician and the non-expert have every right to speak. Moreover, one is also forced to ask by what right and under what authority are regulators undertaking redistribution in a direction that is quite at odds with wider government objectives? If ever there was a case for some more ‘joined-up government’, it is here.

Limits of the application of the broader view of social justice

The principle that water can and should be paid for according to means is certainly not without its limits. In advocating that this principle should be once more accorded its proper place in our thinking, I am not suggesting that it should banish all other considerations. In particular, I am not suggesting that metering, or charges based upon the amount a household uses, are invariably wrong.

The main opponent of the idea of payment according to means comes from the common sense view of how charges should be set. On that view, if we consume twice as much then we should pay twice as much. The common sense view and the social justice view conflict.

But the common sense view is not the economic view. What the economist cares about when it comes to pricing – because it leads to an efficient allocation of resources – is that the marginal or incremental units of consumption is properly priced. This is significant because, unlike the common sense view, it leaves open the question of how the non-incremental units of consumption – which we might call basic consumption – should be charged for. Since payment according to means is a perfectly reasonable candidate for this, a single charging system could combine a social justice approach and an economic approach.

In some cases, the cost of providing additional water may be sufficiently low relative to the cost of installing and maintaining a water meter that the economist could conclude that it is never worth installing meters. In that case, a wholly unmeasured charging system would be acceptable, even from an economic point of view. This might be true, or very nearly, for wetter parts of the country like Wales.

But in general, and certainly in the drier south and east of England, the economic view is that there is a need to price properly the extra units of consumption. That requires metering. But while it does present some practical problems, a metered tariff can be constructed which contains a large element of the social justice principle, as we have shown in a previous paper on this subject.⁹

Thus, while social justice principle finds full and complete expression in the unmeasured charging system, a large part of it can carry through into a metered tariff too.

Is Council Tax the answer?

The justification or otherwise for using Council Tax bands as the basis for determining a household's water bill rests on the extent to which they reflect the broad principle of social justice.

Our recent study of Council Tax argued that it could and should be reformed, as it is currently both regressive and crude.¹⁰ But the use of Council Tax bands as the basis for water charging need not necessarily wait for such a reform. For what is perhaps its single most unsatisfactory feature, namely its regressivity, can be altered without any fundamental reform simply by setting different multipliers to relate the amount that is paid in any particular band to the amount paid in the reference band (band D).

The government's position on the use of Council Tax bands as the basis for water charging has become much more relaxed since it first pronounced against such use in the April 1998 consultation paper. Its position now is that it is prepared to entertain proposals from companies to use Council Tax bands. It is by no means unreasonable to suppose the companies who are obliged, as the water companies are, to provide a supply to any customer, should favour a charging system that is built on the ability to pay. After all, even if the customer cannot pay, they still remain a customer.

Moreover, there may be signs that the broad notion of social justice is beginning to surface in official pronouncements. Thus, in its draft guidelines to OFWAT in August 1999, we find the DETR espousing notions of fairness that combine both the narrow view of social justice ('special measures') and the broad one ('ability to pay'):

*"Fairness and Affordability. The Government proposes to ensure, through Regulations, that protection is offered to the most vulnerable groups who could face severe hardship if subjected to a measured charge. However, we expect the framework of water charging to be one in which there is a fair distribution of costs between customers, recognising the affordability of the service for different groups of customers as well as the costs of provision of the service. Costs should be allocated between different groups of customers on an equitable basis. Charges schemes covering both measured and unmeasured household charges should take account of customers' ability to pay, and address the needs of all those on low incomes, for example through specially designed tariffs and payment options, in recognition of the particular problems which such customers face."*¹¹

But to leave the initiative up to companies entirely betrays a certain lack of confidence on the part of our politicians. It seems to me that it is a responsibility for government itself, rather than the water companies, to set the Council Tax multipliers to be used; after all, the resulting differences in charges between one household and another would be arbitrary – in the same way that tax rates are ultimately arbitrary – and only government really possess the legitimacy to set arbitrary charges.

Furthermore, I know of no evidence to suggest that the principle of using Council Tax bands as the basis for charging is unpopular, and I would not have thought that it was a difficult one to argue.

In conclusion, I suggest that there are real opportunities for both modernising the basis for water charging whilst still retaining the element of ‘ability to pay’. If government leads the way on this issue, then the adverse outcomes from the recent price determination may be avoided in future.

¹ OFWAT, *Final Determinations: Future Water and Sewerage Charges 2000-2005*, November 1999.

² OFWAT, *op. cit.*, p.80.

³ OFWAT, *op. cit.*, p.76.

⁴ DETR, *Water Charging in England and Wales - A New Approach, Consultation Paper*, §2.14 and §2.15, April 1998

⁵ This measure is 50% of average equivalised household income, after housing costs. The figure for 1997/8 is 14.0m (DSS, *Households Below Average Income*, table F2(AHC), October 1999.

⁶ So for example, fully a third of the population live on incomes below the poverty line plus 20%.

⁷ DETR, *Water Charging in England and Wales - A New Approach: Response to Consultation*, §41, November 1998; emphasis added.

⁸ OFWAT, *Final Determinations: Future Water and Sewerage Charges 2000-2005*, p 82, November 1999.

⁹ Hills, R., Huby, M. and Kenway, P. *Fair and Sustainable: Paying for Water – what the government could do*, New Policy Institute, November 1997 show how it is perfectly possible to devise a metered tariff that satisfies economic and environmental criteria as well as the broad notion of social justice set forth here.

¹⁰ Kenway, P. and Palmer, G. *Council Tax: The Case For Reform*, New Policy Institute, November 1999.

¹¹ DETR, *Draft Guidance to the Director General of Water Services under Section 4*, August 1999

SWITCHING TO COUNCIL TAX FROM RATEABLE VALUES

Janet Wright, OXERA

This paper is concerned with the social and incidence considerations associated with Council Tax based tariff structures. It explores whether unmeasured tariff regimes can be constructed which would mitigate the strongly regressive effects that would be expected to occur from a simple move from rateable values to Council Tax bands. It concludes that such tariff structures can be developed by allowing the standing charge to vary by Council Tax band and by increasing the ratio between the bill paid by a top band (H) property and that paid by a bottom band (A) property from the current 3:1 ratio.

Introduction

This paper presents findings from a study of the incidence effects of replacing rateable values by some measure of Council Tax liability as the basis for unmeasured domestic water charges. The study was carried out jointly by the New Policy Institute and OXERA Ltd, and was part of a wider study by the New Policy Institute into the future of the Council Tax.¹

Any judgement about the acceptability of a new charging system needs to balance a range of sometimes conflicting factors, including:

- ***Environmental considerations*** – for example, does the charging system encourage water conservation?
- ***Economic considerations*** – for example, does it provide incentives for both households and water companies to use resources efficiently?
- ***Social considerations***: - for example, does it protect households from pressure to economise on water where health and hygiene could suffer?
- ***Incidence effects*** – for example, how many people gain and lose from the change, by how much, and what are their characteristics?
- ***Practical considerations*** – for example, how easily can the charges be calculated and at what cost?

Earlier work undertaken by OXERA for UKWIR² explored these wider considerations for alternative measured charging regimes, whilst an earlier paper by the New Policy Institute considered the issues more qualitatively for both unmeasured and measured regimes.³ In addition, the DETR has also published research on the incidence effects of alternative charging bases.⁴

The study reported in this paper, however, focuses on the social and incidence considerations associated with Council Tax based charging systems. Its aim was to assess whether unmeasured tariff regimes could be constructed using Council Tax-based charging which would mitigate the strongly regressive effects that would be expected to occur from a simple move from rateable values to Council Tax bands. More specifically, the paper presents results for four different switches of regime for unmeasured charges (options A1 to A4) plus a fifth (option B) which shows the effects of a switch to a simple two-part metered tariff, typical of current measured charging systems in place in the UK.

| Option | Switching From | Switching To |
|--------|---|---|
| A1 | Uniform standing charge + rateable values ('base case') | Uniform standing charge + council tax bands |
| A2 | Base case | Uniform standing charge + council tax bands + 25% single person discount |
| A3 | Base case | No standing charge + council tax bands |
| A4 | Base case | No standing charge + '4:1' council tax bands + 25% single person discount |
| B1 | Base case | Metered tariff |

In all the scenarios above, the study assumed that all unmeasured households were simultaneously moved onto the new charging basis. The new charges were designed so that the total revenue raised by the water company would remain the same as under the existing rateable value based charging system. Inevitably some people's charges would therefore go up and some people's would go down. In assessing the importance of these incidence effects, consideration has been given to estimates of the number of gainers and losers, the amounts of money being gained or lost, and the financial circumstances of the people who gain and lose.

The data-set used in the study covered 880 household customers of the water company Severn Trent plc (see box). Although not, in a strict statistical sense, representative of England and Wales as a whole, the results can be interpreted as illustrations of the broad pattern of the likely difference in incidence effects between tariff structures.⁵

The study was undertaken prior to the recent announcement of the Government's intention to introduce free meters. Under this policy, some households will have a financial incentive to reduce their water bill by switching to a meter. Over time, it can be expected that increasing numbers of households will be induced to switch to meters. To the extent, however, that these shifts take time to develop – with those left on unmeasured charges facing increasingly higher bills as a result of tariff re-balancing - the question of how unmeasured charges are structured remains important.

The data underlying the analysis

This analysis used a model first developed by OXERA Ltd for research on water-charging commissioned by UKWIR.

The data-set employed in the modelling has details of each household's Council Tax, rateable value and water consumption (from water meters installed specifically to measure consumption but not used as the basis for charging).

It also contains details of household size and family type, as well as the socio-economic ACORN classification of houses used as a proxy for vulnerability. In this study, ACORN groups DFG and H are counted as vulnerable, comprising older terraced housing, council estates, and mixed inner metropolitan areas.

On a range of characteristics, such as average occupancy or ownership of water consuming durables, the data-set is nationally representative. Where it is not - for example, the over-representation of high value properties and the under-representation of lone parent families - the model adjusts accordingly. It does, however, have no properties in the highest band, H.

In each of the cases considered, the new prices have been set at a level that leaves the water company's revenue unchanged.

Reading the results

Each graph in this paper presents its results in one of two ways:

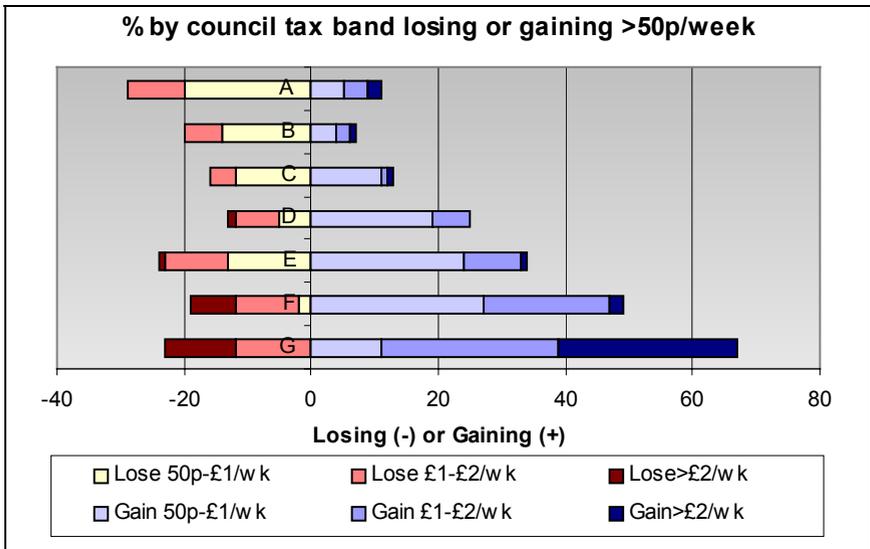
- By the seven Council Tax bands for which data are available from the lowest (A) to the second highest (G).
- By five family types, pensioners, single adults without children, couples without children, lone parents with children, and other parents with children.

For each group, the graphs show the percentage who either gain or lose more than 50 pence per week. The percentage who gain or lose less than this per week are not shown (to aid clarity of presentation). In the text, 'losers' and 'gainers' refer to those shown, i.e. those who are affected by at least 50 pence per week.

Losers (shown in red and yellow) appear to the left of each graph and gainers (shown in blue) to the right. Both groups are split three ways, depending on whether the weekly gain or loss is more than £2, between £1 and £2 or between 50 pence and £1. The darkest shades denote those who gain or lose the most.

A simple switch from Rateable Value to Council Tax

In this scenario, that part of the bill (the variable element) previously calculated based on the property's rateable value is now calculated according to its Council Tax band. A uniform fixed (standing) charge is retained.



These results have two clear cut features, which may be viewed as problems:

- **Problem 1 - Regressivity:** Losers outnumber gainers in the lowest two bands, while winners far outnumber losers in each of the highest four. To the extent that property values represent a broad proxy for household income, the overall result *between* property values is therefore regressive: costs are shifted from the shoulders of the better off to the shoulders of the poorer off. In line with this, twice as many ‘vulnerable’ households are seen to lose rather than gain under this tariff.
- **Problem 2 – Incidence effects:** There are substantial numbers of gainers and losers *within* each Council Tax band. This degree of bill turbulence is replicated when one looks at the results by family type, where again each type contains both relatively many winners and relatively many losers.

Taken together, this is a potentially adverse set of effects from a social point of view, as indeed the Government recognised in resisting any simple substitution of Rateable Value by Council Tax as the basis for water charges.⁶

What lies behind these problems?

The problems above arise directly from the relationship between Council Tax valuations and rateable values.

First, Council Tax as it is currently arranged, is a ‘flatter’ tax than the system of rateable values. Unlike the poll tax which it replaced, Council Tax is not a ‘flat’ tax: people in more valuable properties pay more than those in less valuable properties. But they do not pay as much more as they did under the rating system: under Council Tax, properties in band G pay 2½ times as much as properties in band A. But for those properties in the data-set, the same band G properties paid 3⅓ times as much rates as properties in band A.

Second, among properties in any Council Tax band, there is already a large variation between their present bills under the rating system. The analysis shows that the ratio between the highest and lowest rateable value in each Council Tax band is at least 2½ times, and more than 4 times as much in band A.⁷

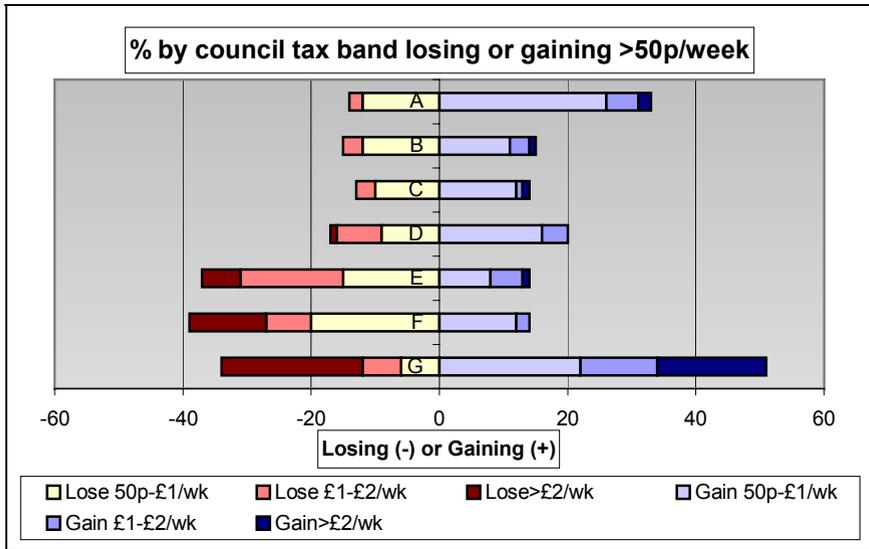
The issue is, therefore, whether it is possible to structure Council Tax based charges in such a way as to reduce or even eliminate these adverse effects.

Coping with regressivity

There are various ways of dealing with the regressivity of a simple shift from a Rateable Value based system to a Council Tax based system of charging.

Abolish the standing charge?

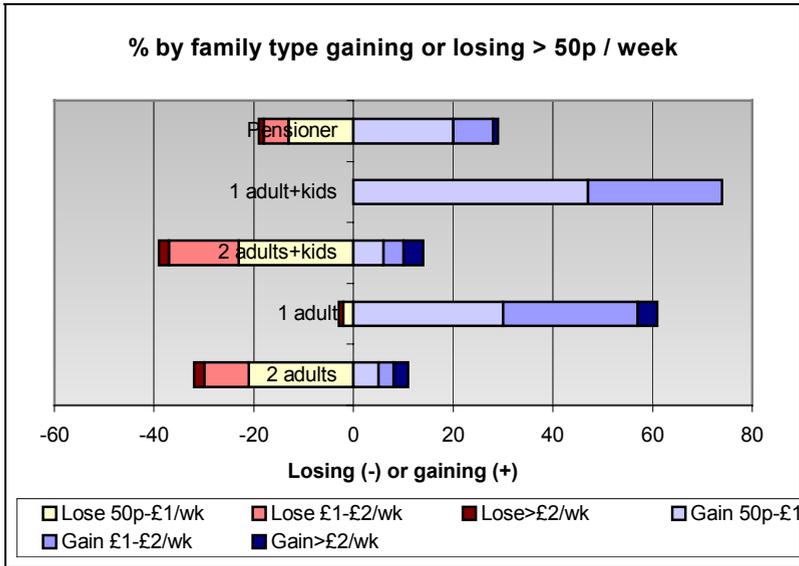
In this scenario, the standing charge (levied uniformly on households) is abolished and rolled into the rest of the bill. Another way of describing this is to say that instead of being uniform, the standing charge varies with Council Tax band, so properties in lower bands pay less and those in higher bands pay more. The next graph shows the effect on gainers and losers.



Varying the standing charge by Council Tax band is enough to offset the regressivity of the basic move to Council Tax, with the bulk of losers now in the upper bands, especially E and F. The greatest net gains are now in A and G (the latter of which actually contains very few households and is therefore much less important than the graph might appear to suggest). Analysis of more detailed results shows that, among vulnerable groups, there are now many more gainers than losers. Overall, this is a marked improvement in terms of the distributional impacts. However, it is important to stress again that these concerns would be just one consideration in any review of the role of standing charges in tariff structures.

Apply the single adult discount?

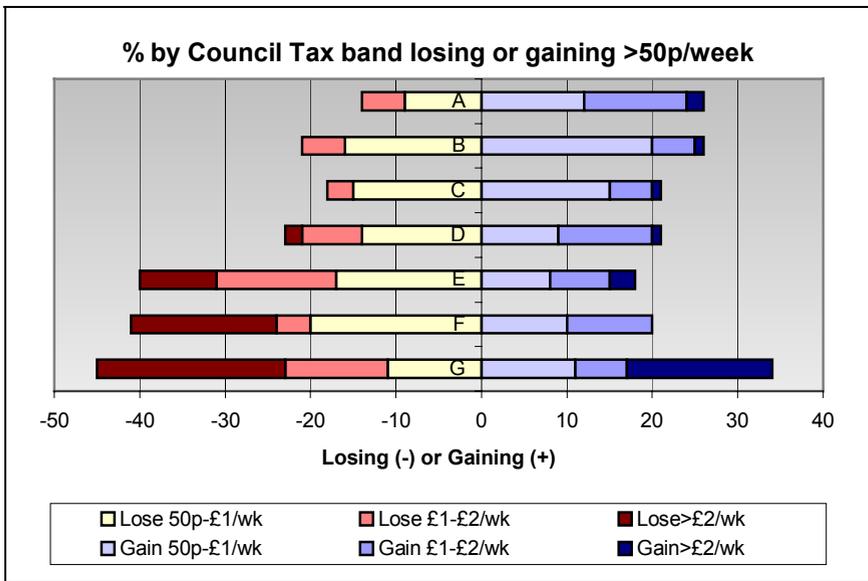
Another possible contributor towards easing the regressivity problem lies in exploiting one of the features of the Council Tax system, which is that single adult households receive a 25% discount. The next graph shows the effect of retaining the uniform standing charge but applying the 25% single person discount to the Council Tax part of the bill for households with only one adult.



The graph shows the results by family type, where it is clear that this discount is sufficient to leave most single adult households as gainers from the switch from rateable values, with consequent losses to other family types. The regressivity of the overall results by Council Tax band is, however, only slightly improved.

Increase differentials between bands?

Another way of addressing the regressivity problem is to increase the differential between the amount that properties in lower bands pay compared with higher bands. In the following example, the Council Tax system has been revised into a 10 band structure (instead of the current eight) with bands A and G split and with multipliers set so that the ratio between highest band (H) and the lowest band (A1) increase to 4 to 1, instead of the present 3 to 1.⁸ The next graph shows the effect of implementing this 4:1 ratio, as well as abolishing the standing charge and implementing the 25% single person discount.



Combining a 4:1 ratio, the single person discount and a standing charge varying by council tax band produces a broadly progressive outcome, with more gainers than losers in A, B and C and more losers than gainers in E, F and G.

If the ratio were increased further, say to 6:1, this would be expected to bring greater benefits to band A as well as benefits to bands B and even C.

As emphasised earlier, further analysis would be required to determine whether such redistribution benefits are a sufficient justification for changing the charging regime or whether other environmental, economic, social and practical considerations outweigh these benefits.

In conclusion, the study suggests that a combination of removing the standing charge and introducing a more progressive set of council tax multipliers would have the potential to make the shift from rateable to Council Tax broadly progressive, with a shift in the burden of water charges from poorer to richer households

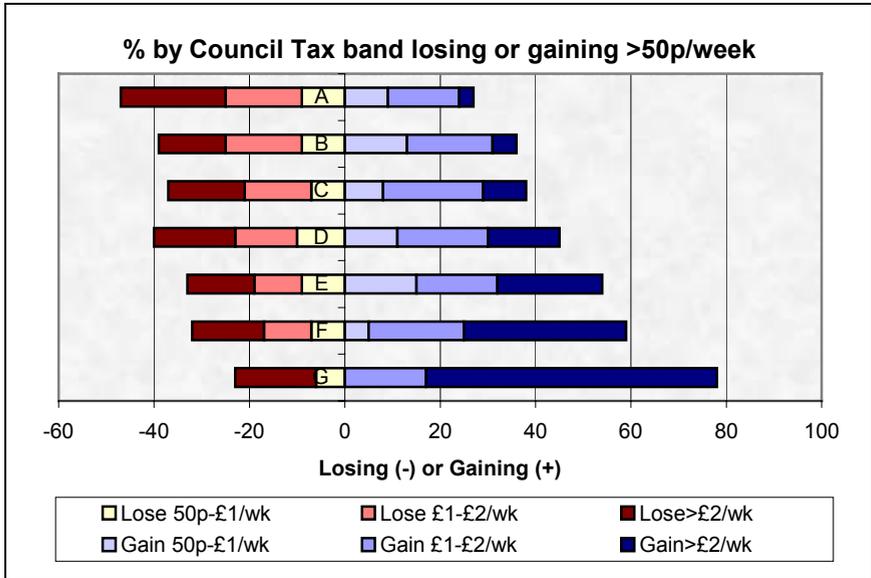
Coping with incidence effects

While these results improve upon the regressivity of the Council Tax on average, there remains a significant degree of arbitrary bill turbulence, creating many losers as well as winners within each band. Even after abolishing the standing charge and increasing differentials between the bills of higher and lower value properties, up to 20% of households in bands A, B, C and D lose more than 50 pence per week.

In principle, there is further scope for refining the way the Council Tax system could be applied to water charging so as to assist lower income households who would otherwise lose out. The most fundamental way would be to extend Council Tax Benefit – the means-tested benefit which pays all or some of the tax due from low income households – to cover Council-Tax based water charges. This option was not, however, explored within the study.

A metered tariff

As part of the study, a preliminary examination was made of gainers and losers in the event of shifting from the present, non-measured charges based on rateable values to a comprehensive system of metering, based on the 1998 tariffs.⁹



The results are certainly adverse in a regressive sense, with more losers than gainers in bands A and B and substantial losses, 40% losing more than 50 pence and 20% (in band A) losing more than £2 per week. Over 70% of families with children lose more than 50 pence a week. 20% of lone parent families and 40% of two parent families lose more than £2 per week.

Allowing the standing charge to vary by Council Tax band removes some but by no means all of the regressivity of the simple metered regime - it is now just band A where losers exceed gainers. All bands still show substantial intra-band transfers. Couples and families with children continue to register substantial numbers of losers.

It should be emphasised, however, that what is being assessed here is not *any* shift to metering but a wholesale shift to metering *on the present tariff*. The conclusion is that, *if* measured charges are to have a more explicit and effective social dimension, then a more refined charging system will be required with alternative tariffs developed to mitigate the regressive effects.¹⁰

Finally, as noted earlier, the Government's policy on metering is now for free optional metering, with compulsory metering allowed for high discretionary water users, notably those with swimming pools, sprinklers and some other devices. The Government has enacted regulations to specify the method of measured charging for specified vulnerable groups.¹¹ The role for further socially oriented measured tariff structures remains unclear.

Conclusion

As stated in the introduction, this paper has not attempted a full analysis of all the considerations of moving from one tariff structure to another. What it has done is to analyse the gainers and losers in a variety of scenarios.

It is easy to see why government has shied away from endorsing a simple switch from rateable values to Council Tax as the basis for domestic water charges. From a social perspective alone, the number of losers, the large degree of random bill turbulence, plus the overall shift in favour of better-off households at the expense of the less well-off, are understandably unattractive features.

The analysis, however, show that tariff structures can be developed which mitigate these regressive results. In particular:

- Allowing the standing charge to vary by Council Tax band (or, which is equivalent, removing the charge and recovering the money through the rest of the bill) reverses a large degree of the otherwise regressive impacts.
- Increasing the ratio between the bill paid by a top band (H) property and that paid by a bottom band (A) property from 3:1 to 4:1 or higher makes a further improvement.

On the other hand, it seems unlikely that such reform of the Council Tax system as it is applied to water charging can really reduce the many losers to be found at every level as a result of a shift from rateable value.

¹ The main elements of that study which were not related to water were published in *Council Tax: The Case For Reform*, by Kenway P. and Palmer G., New Policy Institute, 1999.

- ² See UKWIR 'Towards an Environmentally Effective and Socially Acceptable Strategy for Water Metering in the UK' 1998.
- ³ Kenway and Palmer (op. cit.).
- ⁴ Stamp M. 'Incidence Effects of Charging for Domestic Water and Sewerage Services' Department of the Environment, Transport and the Regions, July 1998
- ⁵ For more discussion about the representativeness of the dataset and the model used, see UKWIR (op cit).
- ⁶ Department of the Environment, Transport and the Regions, 'Water Charging in England and Wales: Government Decisions Following Consultation', November 1998.
- ⁷ To exclude extreme values, 'highest' and 'lowest' are the values 2½% from each end of the distribution within any band.
- ⁸ For full details of this still minimum reform of the Council Tax, see Kenway and Palmer (op. cit.). The Council Tax multipliers for the 10 bands, expressed as usual with band D normalised to 1, is: A1 – 5/9; A2 – 6/9; B- 7/9; C – 8/9; D- 1; E – 11/9; F- 13/9; G1 – 15/9; G2 – 17/9; H – 20/9.
- ⁹ Calculations presuppose current (1998) average England and Wales standing charges (£32), and a uniform volumetric rate calculated to ensure revenue neutrality.
- ¹⁰ Kenway and Palmer (op. cit.) and UKWIR (op cit) which considered whether tariffs could be designed to reconcile the economic and environmental imperatives that drive towards the adoption of a metered tariff, with the concerns for social justice that traditionally militate against the *current* metered tariff.
- ¹¹ DETR 'Water Industry Act 1999: Delivering the Government's Objectives, February 2000. Vulnerable customers are defined as a) any person who is entitled to receive (or resides with someone entitled to receive) council tax benefit, housing benefit, income support, disabled person's tax credit, working families tax credit or income-based job-seeker's allowance, and b) is either entitled to receive child benefit for three or more dependent children under the age of 16 who reside in the premises, or is diagnosed as suffering from, and receiving treatment for, specified medical conditions.

SOCIALLY AND ENVIRONMENTALLY RESPONSIBLE PRICING IN WATER

**Keith Harris, Director of Finance and Regulation, Wessex
Water**

This paper discusses how charging policy should be altered to resolve some of contradictions in the current regime, with the aim of creating more environmentally and socially desirable outcomes for consumers, for the water industry and for the economy as a whole. It provides some proposed tariff structures to achieve these objectives, covering both measured and unmeasured water use.

Introduction

Four out of five customers regard water and sewerage services as either good or very good value for money. This is not surprising given that the cost of water accounts for only 1.5% of consumer expenditure, which is less than electricity or gas and considerably less than food. Yet despite this the industry is hardly popular.

If this lack of popularity stems from 15 years of rising prices and profits, then the industry's reputation is set to improve: the 1999 price review resulted in significantly lower bills, profits and share prices. It has also resulted in the largest ever environmental improvement programme. Ironically, however, this programme will result in renewed price increases before 2005 and any popularity may therefore be short lived.

But perhaps the problems of the industry are more fundamental. Arguably, the real quandary is that people still struggle with the private sector providing what many continue to regard as a public service.

Consider the following pricing conflicts and pressures that result from this dichotomy:

- Charges must be low but still sufficient to finance a major environmental improvement programme.
- The cost of meeting growth in demand should be self financing but the majority of use is to remain unmeasured.
- Tariffs should signal the increasing cost of water but at the same time should not lead to social exclusion.
- People should be encouraged to use water wisely but without the need for compulsory metering.

This paper discusses how charging policy should be altered to resolve some of these contradictions and, as a consequence, create more environmentally and socially desirable outcomes for consumers, for the water industry and for the economy as a whole.

The economic principles and political imperatives

It is perhaps useful to begin with an understanding of the economic and political background to the water industry in the UK. In the main, water services display characteristics akin to what economists describe as a ‘public good’. Water and sewerage services are:

- **Non excludable:** society’s values demand that a basic provision of the service be made at all times and to all people irrespective of their ability to pay.
- **Non rejectable:** there is a lack of an effective substitute so customers must use the water provided irrespective of its quality or price. Furthermore, it is supplied through a common set of pipes to common standards.

Moreover, for the most part, the cost of supplying an extra unit of water is very low. The cost of the asset network is largely sunk and the variable costs of provision are only 5% to 10% of the final selling price.

In these circumstances, the way in which costs are recovered can do little to improve the allocation of resources. Therefore, the amount that any one household should pay becomes largely an equity decision.

This is probably just as well as the vast majority of customers continue to pay in relation to the old rateable value of their property rather than on any notion of resources consumed.

People are, however, increasingly opting to pay by meter. Following the government's decision to force companies into a free meter option – which in turn reflected a desire to promote choice on payment in lieu of any meaningful form of competition in water - the speed of 'switching' has increased dramatically.

This can be useful. As demand approaches capacity, or as an improvement in quality is proposed, the nature of water changes more to that of a 'private or mixed good'. Under these circumstances, rationing or restricting use, or at least establishing true willingness to pay, becomes increasingly desirable. At least in principle, metering provides a means through which to do this.

The real world realities

Minimising the future price of water requires companies and customers to manage investment driven by the continued rise in peak demands. This will be significant. Peak day demand – which determines investment in much of the distribution and storage network – is set to rise by almost 1% p.a. over the next 25 years. The majority of this growth comes from the more affluent sections of society. People who are better off tend to own more water-using appliances, such as power showers and waste disposal units, and have a greater propensity to water their gardens. But these are exactly the people who, quite understandably, do not choose to opt for a water meter.

Water forms a much smaller percentage of their disposable income than is the case for those on low incomes (see table 1 overleaf). Consequently, even though their bills are relatively high, the cost of water is hardly an issue which warrants concern, let alone action. Those who are high users, and who do actually think about the price of water, soon conclude that they are better off not switching.

Table 1 - % of household income accounted for by water charges

| Household income | Percentage |
|-------------------------|-------------------|
| Less than £10k | 2.4% |
| £10k to £20k | 2.1% |
| £20k to £30k | 1.3% |
| Over £30k | 0.9% |

Rather, today's meter optants tend to be high rateable value, high income, low occupancy customers. The consequent impact that optional metering has on water resources and the environment is negligible. Additionally, given OFWAT's tariff balancing rules, the income lost from metering is recovered from the unmeasured customer base, hitting those on the lowest rateable values the hardest.

Reforming unmeasured charges

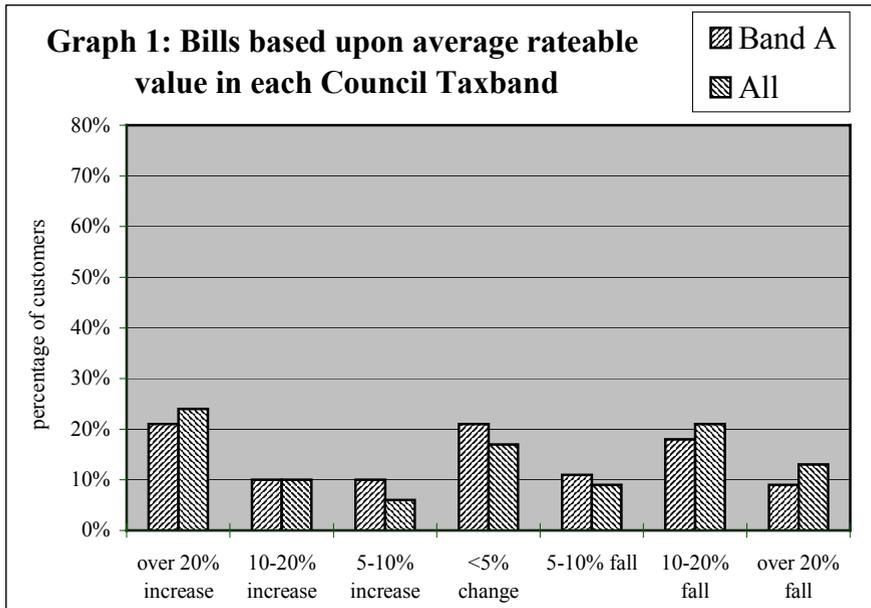
The existing free meter option scheme is not working either from a social or environmental perspective. But it is probably not politically possible to move to either extreme of withdrawing the free meter option or widespread compulsory metering of those who impose peak demands¹. Consequently, a more radical approach to setting unmeasured tariffs is required.

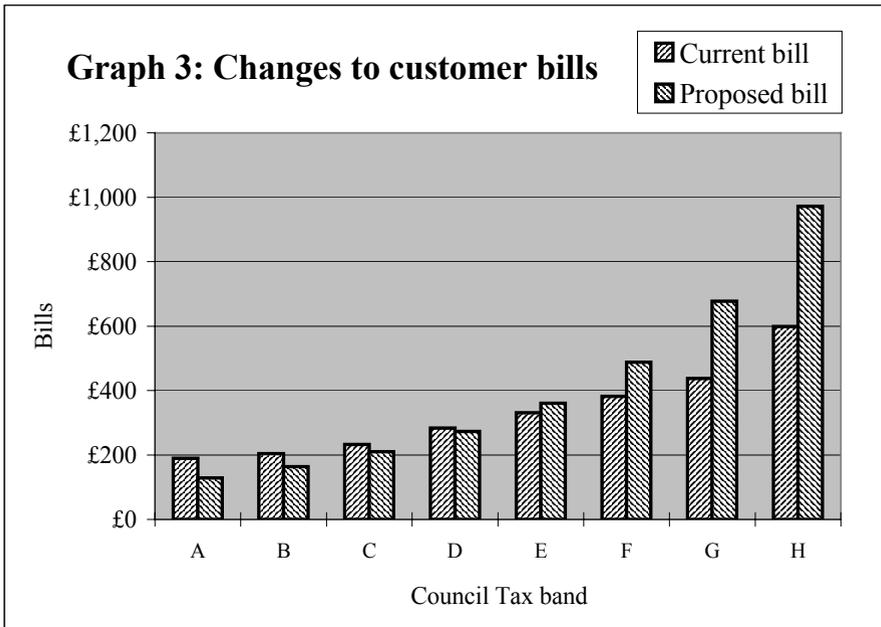
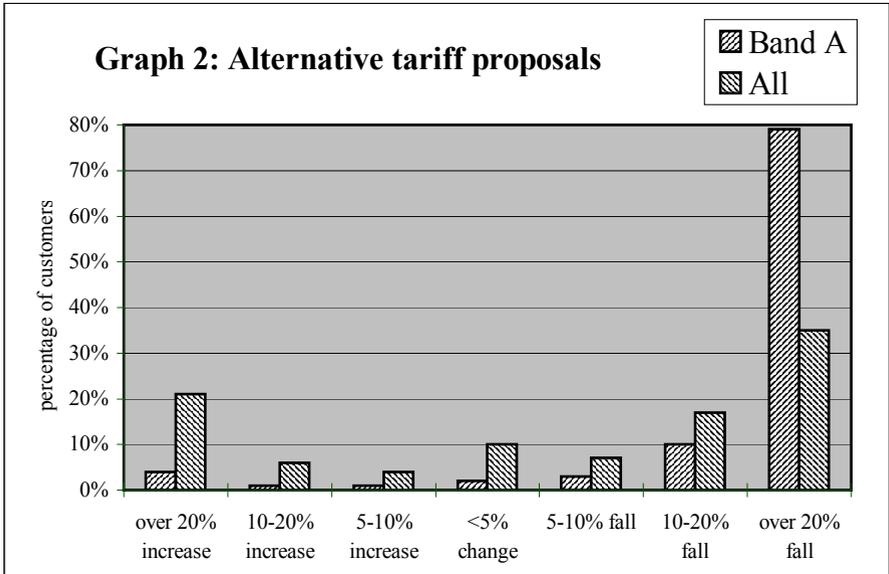
One alternative is to put up the price of water to those who are more likely to be peak users and, at the same time, to reduce the bills of everybody else. This can be achieved through any system which is linked to ability to pay, including the existing rating system. For example, it would be perfectly possible to change the structure of rateable value based charges so that those at the bottom end of the income scale pay less and those at the top pay more.

But rateable value is increasingly out of date and there is not universal coverage. An alternative and possibly complimentary system would be to progressively move to the use of Council Tax bands. The advantages are that Council Tax bands are widely understood and accepted, universal, relatively cheap to implement, and they retain the link to ability to pay.

Opponents of such a change say there will be significant incidence effects, possibly on the scale of the poll tax. Whilst it is true that there are risks, there are ways in which these may be reduced. It is possible to phase any changes in, for example on change of occupancy. More fundamentally, unmeasured charges can be restructured in favour of those least able to pay and, in so doing, limit the incidence effect of the change. The graphs overleaf illustrate:

- Graph 1 analyses Council Tax charges based on average rateable value in each band, showing the percentage of gainers and losers by band. Not surprisingly there are as many winners as there are losers, but those in the lowest rateable value bands have the most to lose.
- Graph 2 illustrates an alternative proposal where tariffs are based upon a 9:1 ratio of charge between band A and band H. Such a tariff is deliberately weighted in favour of those on low incomes, and this is reflected in the percentages of winners and losers.
- Graph 3 compares the average household bill of the current tariff with that of our proposed tariff.





Metered tariffs

Re-structuring of just the unmeasured tariffs is not enough. Even assuming that it did promote metering amongst those who have greatest discretionary use - and that is yet to be proven - measured tariffs also must be reformed if we are to protect those least advantaged and bring about a more efficient use of water. Council Tax bands have a role to play in this.

Currently every customer, rich or poor, faces the same metered price. Not surprisingly therefore the cost of metered water is more regressive than in the unmeasured sector. Furthermore, it is low income households who have the greatest incentive to save, as their water bills are a greater share of their total household budget.

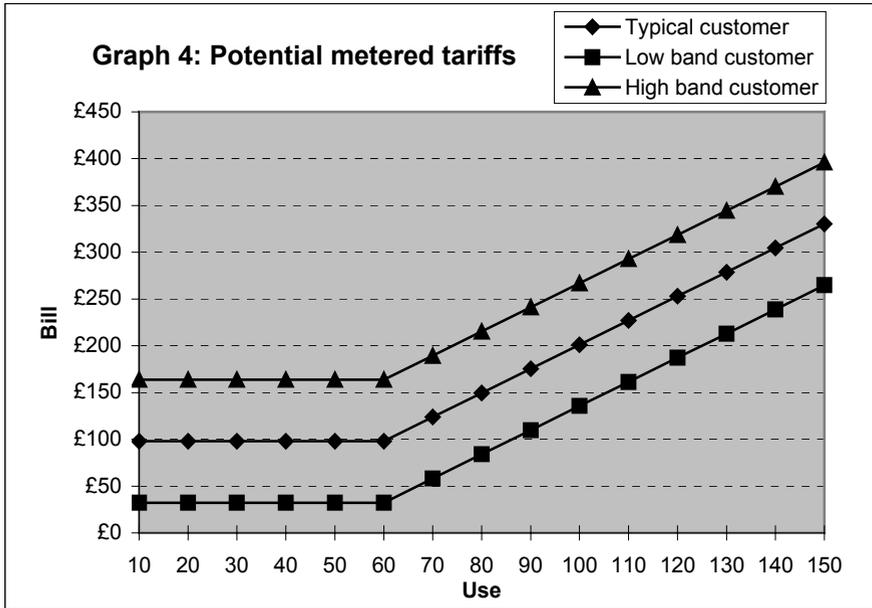
This is exactly the wrong message. There is little if any need or purpose in restricting the use of these customers who, on the whole, do not impose peak demands. Indeed, given the limited amount of discretionary use in low income households, any reduction in demand is likely to come in the form of essential use so increasing the instances of what is fashionably known as social exclusion.

Contrast the situation for the high income, high use, customer. Whilst the incentive to save is greater than under an unmeasured system, it is still small. The impact that consuming an extra unit of water has upon the disposable income of more affluent customers is less than a third of that to those on low incomes. Consequently, the incentive to reduce demand is lowest for the group who you need to influence the most.

The solution is to introduced measured tariffs which reflect ability to pay as well as use. For example, there is no reason why eight volumetric rates could not be introduced, one for each Council Tax band. Those in band A would then pay less per cubic meter of water than those in Band H. In so doing, incentives to save are tailored to reflect the impact upon household income – the biggest single driver of behavioural changes - and the potential for social exclusion is reduced.

The structure of the tariff is also important. It is more important for prices to be higher for high levels of use than for the first unit used. Consequently, the implementation of rising block tariffs would add to both the social and environmental message.

Graph 4 presents a potential tariff incorporating both of these points.



The difficulty of course is to switch customers from their existing tariffs. As with unmeasured tariffs, there are bound to be some negative incidence effects. But again, these could be potentially managed by allowing customers to remain on the existing tariff structure whilst they continue to live in their current property.

Summary

What do we want from our utilities? At a recent conference, the Minister of State for the Environment made it clear that he was looking for water companies to introduce tariffs which protect the environment but which also have a social dimension. Cost-reflective tariffs, whatever that means, did not get a mention. If environmental and social policies are on the agenda then maintaining the status quo is clearly not an adequate solution.

Today’s policies are leading to the unwinding of existing cross subsidies as high-income, low-use customers opt for meters. Metering does more to protect increasingly scarce resources than unmeasured charging but the effectiveness is not all it might be.

There is a need for a two pronged attack:

- Unmeasured charges could be re-structured. This will protect those on low rateable values from the effects of the ongoing switch to meters and do more to encourage those with potentially the largest discretionary use of water to move to metering and curtail their use.
- Metered tariffs should reflect ability to pay as well as use. This will preserve the long standing traditions of social tariffs for water and can provide much more meaningful incentives to use water wisely.

Whilst not perfect, the use of the Council Tax bands to differentiate charges is central to success in both areas.

¹ Although it is legally possible in certain circumstances.

THE IMPACT OF WATER METERING ON COUNCIL TAX BASED CHARGES

**Peter Vass, Director, Centre for the study of Regulated
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By way of a worked example, this paper explains why, in principle, all domestic consumers will elect to take the metered option for water usage in the longer term. It concludes that this severely weakens the case for reforming the unmeasured tariff, whilst leaving the measured tariff as it currently is.

Introduction

The debate about whether to introduce charges based on Council Tax in place of rateable value has to take account of the introduction of domestic water metering, particularly now that free meter installation is available. This paper explains why, in principle, all domestic consumers will elect to take the meter option in the longer term. A simplified worked example is used to illustrate the financial rationale for switching, the sequence of switching households over time, and the distributional consequences.

The arguments for charges based on Council Tax in preference to rateable value have been credible, in terms of both equity, where capital value is used as a proxy for ability to pay, and the relative fairness of using an up-to-date valuation base. However, if it can be shown that, with the introduction of domestic metering, consumers will inexorably shift to the meter option in the longer term, then the rationale for introducing Council Tax based charges, even in the interim, is severely undermined. This is particularly so where any re-balancing of incidence has political repercussions, most notably in relation to the losers. A two stage process of transfer from rateable value to Council Tax, and then to meter-option, rather than a direct route from rateable value to the consumer's personal choice for a meter-option, will simply cause unnecessary public concern and dissent.

The incentive to choose a meter

Other things being equal, and assuming rational decision-making, domestic consumers will take the meter option when it reduces their bills. The decision will be based on the meter tariff available, compared with rateable value based charges, and the household's expected water usage.

If we assume in the first instance that all switching households continue to use the same amount of water, then the total revenue recovered by a water company for supplying water will fall. In a regulated environment, where the allowed revenue is to cover the costs incurred by the water company in supplying water, including a normal rate of return on assets, then that shortfall of revenue has to be recovered from the remaining non-metered consumers. This will increase the annual bill for non-metered consumers and hence increase their incentive to swap to a meter.

A certain proportion of these non-metered domestic consumers will find that, with the increased bills, the financial 'cost-benefit' now shows it to be in their interest to swap to a meter. Once they do that, the cycle repeats itself until, eventually, all consumers charged on rateable value have been induced to swap. Once the meter option has been introduced, it becomes the 'base-line' that drives (or incentivises) the process of switching to metering.

Inevitably, the process may be a slow one. Some people will not switch, either on grounds of principle, or because they are not bothered to consider any change from the status quo, or because they are concerned that metering brings with it the risk of much higher charges in the future if their demand for water increases in the future. However, as the non-metered bills rise inexorably over time to ensure that the total required revenue to meet the costs of supply is recovered, even these consumers will find growing financial cost a reason to change their view and swap to metering. The last consumers to swap will be the high water use consumers who are low rateable value households.

Illustrative example

A useful way to demonstrate this cycle, and the policy implications, is with a simplified worked example. The paper then looks at the effects of:

- Reduced demand through metering.
- The distributional impact of non-cost- reflective meter tariffs;
- Protecting vulnerable groups by capping their bill.

Assumptions

1. Costs vary with water use (£2 per m³) plus a fixed household cost of £50 per annum per household.
2. Demand stays the same whether metered or not (inelastic demand). The effect of relaxing assumptions 1 and 2 is considered at the end.
3. Each rateable value group swaps to metering when its bill can be reduced.
4. Election to swap takes effect from the beginning of the next period, so no transitional loss of revenue to be recovered.

Initial position

- No metering option.
- Average household consumption per year = 100m³.
- Average rateable value (RV) per house = 200.
- Four households divided into four types:

| | m ³ | RV | |
|--------------------------|----------------|-----|----------------------------|
| a) high RV/low use | 50 | 400 | (i.e. x 2 average RV) |
| b) low RV/low use | 60 | 75 | (i.e. x .375 average RV) |
| c) high RV/high use | 150 | 250 | |
| d) low RV/high use | 140 | 75 | |
| Total for all households | 400 | 800 | |
| Average per household | 100 | 200 | |
| RV poundage (£) | | 1 | (i.e. £800 costs ÷ 800 RV) |

- Total cost to be recovered: 400m³ x £2 = £800 plus 4 x £50 = £1000.

Table 1 - Distribution of bills under Rateable Value charging scheme

| | RV | x | Poundage £ | = | RV element | + | Standing Charge | = | Total bill (£) |
|--------|-----|---|---------------|---|---------------|---|--------------------|---|-------------------|
| HRV/LU | 400 | x | 1 | = | 400 | + | 50 | = | 450 |
| LRV/LU | 75 | x | 1 | = | 75 | + | 50 | = | 125 |
| HRV/HU | 250 | x | 1 | = | 250 | + | 50 | = | 300 |
| LRV/HU | 75 | x | 1 | = | 75 | + | 50 | = | 125 |
| Total | 800 | x | 1 | = | 800 | + | 200 | = | 1000 |

Table 2 - Distribution of measured bills using meter option

| | m ³ | x | £ per m ³ | = | Volume element | + | Standing Charge | = | Total bill (£) |
|--------|----------------|---|----------------------|---|-------------------|---|--------------------|---|-------------------|
| HRV/LU | 50 | x | 2 | = | 100 | + | 50 | = | 150 |
| LRV/LU | 60 | x | 2 | = | 120 | + | 50 | = | 170 |
| HRV/HU | 150 | x | 2 | = | 300 | + | 50 | = | 350 |
| LRV/HU | 140 | x | 2 | = | 280 | + | 50 | = | 330 |
| Total | 400 | x | 2 | = | 800 | + | 200 | = | 1000 |

Comparing Tables 1 and 2, the HRV/LU group clearly elects to swap to metering (i.e. £150 metered bill compared with £450 RV bill) for period 2 onwards.

Effect on unmetered poundage for next period (period 2)

- Unmetered RV element revenue required equals £800 less measured (i.e. metered) revenue of £100 from HRV/LU household equals £700.
- Poundage equals £700 divided by unmeasured RV (800 - 400 = 400).
- Therefore, poundage = $\frac{£700}{400} = £1.75$ per £ of RV.

Table 3 can now be prepared for the second period for the three remaining unmetered household types (i.e. those that chose not to swap to a meter in the first period).

Table 3 - Unmeasured bills with new poundage (period 2)

| | RV | x | Poundage £ | = | RV element | + | Standing Charge | = | Total bill (£) |
|--------|-----|---|---------------|---|---------------|---|--------------------|---|-------------------|
| LRV/LU | 75 | x | 1.75 | = | 131 | + | 50 | = | 181 |
| HRV/HU | 250 | x | 1.75 | = | 438 | + | 50 | = | 488 |
| LRV/HU | 75 | x | 1.75 | = | 131 | + | 50 | = | 181 |
| Total | 400 | x | 1.75 | = | 700 | + | 150 | = | 850 |

Clearly, both the LRV/LU and HRV/HU groups will now swap to metering when comparing their period 2 bills with the metering option (see table 2) because the rateable value poundage has risen from £1 to £1.75 in order to recover the lost revenue from the first group that swapped to metered bills.

Effect on unmeasured poundage for the next period (period 3)

- Unmeasured revenue required = £800 less measured revenue elements of the HRV/LU, LRV/LU and LRV/HU households (100 + 120 + 300) equals £280.
- Poundage equals £280 divided by unmeasured RV (75 for the remaining LRV/HU household).
- Therefore poundage = $\frac{£280}{75} = £3.7333$ per £ of RV.

Table 4 can now be prepared for the third period for the last remaining unmetered household type, the one with high water use and low rateable value.

Table 4 - Unmeasured bills with new poundage (period 3)

LRV/HU $75 \times £3.7333 = £280 + £50 = £330.$

Final outcome

The last LRV/HU household is now required to pay an unmeasured bill of £330, the same as the measured bill, so would be willing to swap to metering and in two years all households have swapped to metering.

Table 5 compares the distribution of bills with no metering and after all households have swapped to metered bills. The difference between them is then shown as the gain or loss for each household type. Whilst the losers can be said to have swapped voluntarily to metered bills, this rational choice is a consequence of the rising rateable value poundage that occurs in each period in order to recover the lost revenue from households switching to meters.

Table 5 - The distribution of bills before and after metering option

| | Total household bill Unmeasured RV £ | Total bill Measured m ³ £ | Change (Gain = +) £ |
|---------|--|--|---------------------------|
| HRV/LU | 450 | 150 | + 300 |
| LRV/LU | 125 | 170 | - 45 |
| HRV/HU | 300 | 350 | - 50 |
| LRV/HU | 125 | 330 | - 205 |
| Average | 250 | 250 | 0 |

The main incidence effect is therefore that the HRV/LU group gains substantially, offset by the LRV/HU group, which loses substantially.

The time path of average measured and unmeasured bills

It is useful to note the sequence through which the average measured and unmeasured household bills have passed, which is shown in Table 6.

Table 6 - The profile of average bills over time

| | Measured | | Unmeasured | | | Overall |
|------------------|----------------|----------|----------------|-----|----------|------------------|
| | m ³ | bill (£) | m ³ | RV | bill (£) | Average bill (£) |
| Initial position | n/a | n/a | 100 | 200 | 250 | 250 |
| Period 2 | 50 | 150 | 117 | 133 | 283 | 250 |
| Period 3 | 87 | 223 | 140 | 75 | 330 | 250 |
| Final position | 100 | 250 | n/a | n/a | n/a | 250 |

The average measured bill drops sharply compared with the unmeasured, as the very low users swap first, and then rises.

Reduced demand

If households planned and achieved reductions of 10% in water use when switching to metered supply, then the outcome will depend on whether the metered tariffs change with water usage. Assuming a fully cost-reflective tariff at a constant £2 per m³ (see table 2), then the average bill would fall from £250 pa to £230 pa (i.e. 90m³ x £2 = £180 plus £50 = £230).

If metered tariffs are not cost-reflective

If the costs did not vary with water use (say they were completely fixed), then the cost per m³ supplied would need to rise to recover the fixed costs as consumption fell and the average bill would remain the same (i.e. £800 fixed cost to be recovered ÷ 360m³ = £2.222 per m³ x 90m³ = £200 plus £50 = £250 bill per household). In this situation, high users would be cross-subsidising low users based on the non-cost-reflective tariffs in force, but at lower overall demand.

Protecting vulnerable groups

The Government now has power under the 1999 Water Act to issue guidance and regulations to ensure vulnerable customers are protected in companies' charging schemes. The effect of capping the maximum bill of the LRV/HU household in this illustrative example is considered below.

Suppose the Government issued regulations that the LRV/HU group (household) was to be capped at a bill of £200, then the final stage of the above (i.e. the calculations for period 3 shown in table 4), would be:

| | | | |
|---------------------------------------|---|------------|------------|
| Required unmeasured revenue | = | £ 330 | Total bill |
| Less allowed unmeasured revenue | = | 200 | Total bill |
| Equals shortfall | = | <u>130</u> | |
| Add metered revenue | | <u>520</u> | |
| Equals £ required from metered tariff | | 650 | |

$$\text{Therefore } \frac{£650}{\text{metered volume}} = \frac{£650}{260\text{m}^3} = £2.50 \text{ per m}^3$$

This is an increase from £2 per m³ to £2.50 to recover the lost revenue through capping the bills of vulnerable customers. The outcome is shown in Table 7.

Table 7 - The outcome with capping of the bill for the vulnerable household type

| Metered | m ³ | x | £ per m ³ | = | Volume element | + | Standing Charge | = | Total bill (£) |
|-------------------|----------------|---|------------------------|---|----------------|---|-----------------|---|----------------|
| HRV/LU | 50 | x | 2.50 | = | 125 | + | 50 | = | 170 |
| LRV/LU | 60 | x | 2.50 | = | 150 | + | 50 | = | 200 |
| HRV/HU | 150 | x | 2.50 | = | 375 | + | 50 | = | 425 |
| Capped unmeasured | RV | x | Poundage £ | = | RV element | + | Standing Charge | = | Total bill (£) |
| LRV/HU | 75 | x | 2.00 (£150 ÷ 75 RV) | = | 150 | + | 50 | = | 200 |
| Total | | | | | 800 | + | 200 | = | 1000 |

Comparing this scenario with the initial unmeasured position:

Table 8 - Comparison of the distribution of bills with capping

| | Total bill unmeasured £ | Total bill measured + capping £ | Change (Gain = +) £ |
|---------|----------------------------|------------------------------------|------------------------|
| HRV/LU | 450 | 175 | + 275 |
| LRV/LU | 125 | 200 | - 75 |
| HRV/HU | 300 | 425 | - 125 |
| LRV/HU | 125 | 200 | - 75 |
| Average | 250 | 250 | 0 |

The result is interesting: the HRV/LU group still gains massively but the losses are spread more evenly across the other households.

Modelling

This process of re-balancing could be modelled on a spreadsheet if data on the distribution of RVs, combined with estimates of the distribution of water consumption for each RV group, was input. In practice, the degree and speed of switching would be influenced by inertia, lack of awareness and worry about future demand for water increasing in the household. This resistance coefficient would need to be incorporated into the modelling.

Conclusion

The Government's decision to legislate for domestic metering with a free meter option has important implications in that it provides the incentive in the longer term for all domestic consumers to swap to a meter. The distributional impact of higher bills for certain household types, particularly those with high water use in low rateable value houses, is of concern, and the government has decided to protect them by capping the bills of certain vulnerable groups to be no more than the average bill. This will be financed, as shown above, by cross-subsidy. Given that the meter option in principle will lead to all consumers taking the meter option, the policy debate on whether unmeasured bills should be based on Council Tax bands rather than rateable values is severely undermined.

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