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Spoilt for Choice? The Costs and Benefits of Opening UK Residential Energy Markets

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The UK energy regulator's primary duty, redefined by the Utilities Act 2000, is to protect the interests of consumers, "wherever appropriate by promoting effective competition". Choice of supplier for residential energy consumers was introduced between 1996 and 1999, and in April 2002 the regulator removed all ex ante constraints on prices in these markets, even though incumbents continue to supply more than 60% of consumers. This paper extends earlier work to analyse changes in consumer attitudes and behaviour in the early days of the competitive market. The nature and extent of market power retained by incumbents, and the size and distribution of consumer benefits from deregulation are estimated. This in turn enables assessment of how far the regulator's programme of promoting competition has indeed protected the interests of consumers.

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1 Introduction

Reform of the UK energy sector has involved the sale of state assets to private shareholders, the vertical separation of generation and transmission in electricity, and opening the generation and retail sectors to new entrants. This paper focuses on opening retail markets, when supplier choice was extended to residential consumers (it had already been made available in the industrial and commercial sectors). The paper uses data from two consumer surveys, one a panel survey, and builds on previous analysis of one stage of that panel. That work, reported in Giulietti, Waddams Price and Waterson, 2003, focused on the gas market in the second of the three stages of the panel. The consumer responses suggested that the incumbent retained considerable market power, and that even if all switching consumers had chosen the best available offer, the gains for consumers were unlikely to be sufficient to outweigh the costs which companies incurred in inducing consumer switching.

This paper builds on this earlier work through preliminary analysis of the dynamics of explanatory variables over the period of the panel survey; in particular how expectations about matching, minimum savings for which consumers are willing to switch, and other explanatory variables such as awareness, switching behaviour and attitudes changed over the three years covered by the survey. It also uses a second consumer survey to assess the *actual* gains that consumers have made, and the characteristics of households who have gained most from opening the market. The analysis is extended to electricity, which is the main focus of this paper and has important policy implications both for the future regulation of the energy sector and for any extension of competition to other industries and countries.

In the next section the changes in energy markets and regulation are described, and in section three the consumer surveys and earlier analysis of the data set are explained. Section four outlines some of the dynamic changes revealed by the data, and section five reports the gains which switching consumers have made.

2 Opening UK Energy Markets

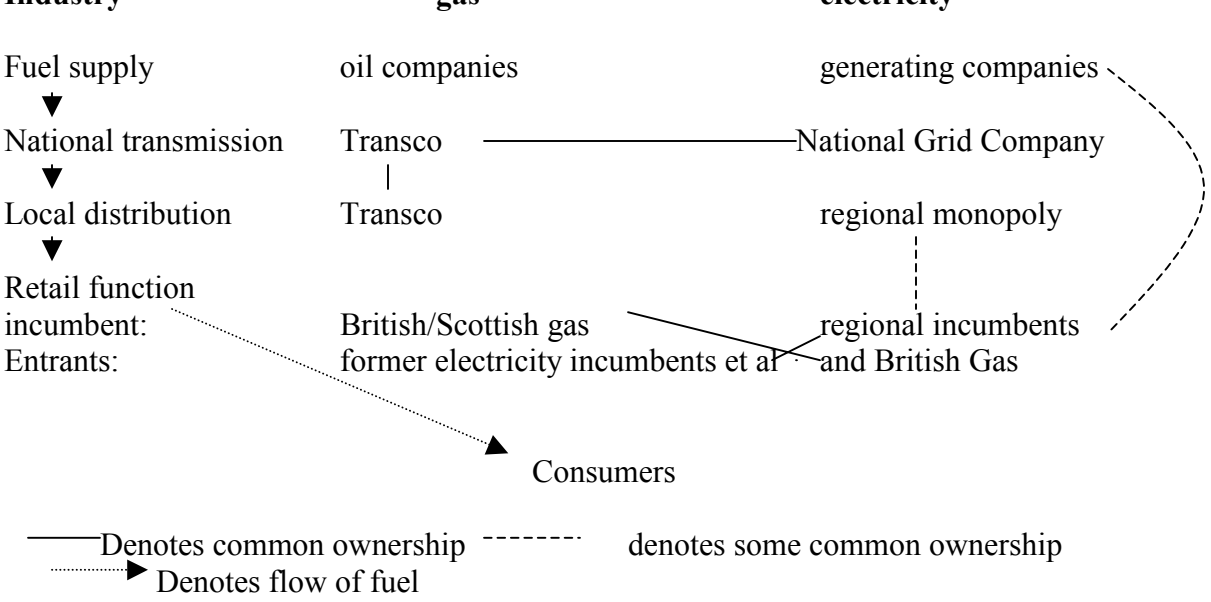
Deregulation of UK energy markets began with privatization of the state monopolies. In 1986, British Gas was sold as an integrated national monopoly, serving about 85% of the population of England, Wales and Scotland (the most rural areas are generally not supplied); the company's motto of 'from beachhead to meter' reflected its ownership of high pressure national transmission pipes, low pressure distribution pipes, meters and the gas which was supplied through this network. The initial privatization legislation retained a statutory monopoly of small and medium sized customers and very little provision for competition in the larger market, but this monopoly was eroded by a series of reports and ministerial decisions between 1988 and the mid nineties, culminating in the 1995 Gas Act which set the scene for competitors to enter all parts of the retail market from 1996. The residential market was opened gradually, in regional tranches, over the two years from May 1996. In the meantime the regulator forced British Gas to separate

its gas selling and pipeline operations into separate entities within the same company. In 1997 British Gas demerged into Centrica, which marketed gas under the trade name British Gas in the UK (and retained some gas fields) and Transco, which owned the pipes and meters. After various other reorganizations, Transco merged with the national electricity transporter, National Grid, in 2003.

National Grid had been separated from generation when the electricity industry was divested in 1990-91. Entry into the generation sector was opened, and the previously nationalized generation assets divided into three companies. Before privatization, retailing and regional distribution were in the hands of fourteen local monopolies. These were privatized as monopolies with a joint license to distribute and retail power, and the retail function was to be exposed to entry in stages: from 1990 for very large industrial customers, for medium sized customers in 1994, and for the whole market in 1998. As a result of these changes all consumers had a choice of both gas and electricity suppliers by mid 1999. Under the Utilities Act 2000, licensing of distribution and retail activities of the former incumbents were separated, and a rash of divestments and mergers with upstream operations followed. At the time of writing, there was no connection between the ownership of the incumbent retailer and the local distribution wires in half of the fourteen electricity distribution regions of England, Scotland and Wales (Electricity Association, 2003).

In the residential market, consumers have a direct relationship with their retailers, who arrange for purchase of the fuel, its transmission and distribution, and for the retailing functions (e.g. meter reading, billing). Each retailer must publish a tariff for each payment method (see below) and is effectively obliged to serve all consumers who seek to purchase at that tariff. There is a limit on how often tariffs can be changed, and no special deals can be struck with individual consumers. The bill contains information about how the total is composed of fixed rate, fuel charges (sometimes declining block) and tax, but do not itemize the constituent parts of the retailer's costs; the retailer therefore takes the risk (and benefits) from changes in upstream costs, including generation. A comparison of the costs of consuming energy, based on these tariffs, is published by the energy consumer body, energywatch, as part of its statutory duties.

Figure 1: Vertical stages of the gas and electricity industries



Households pay for energy in one of three ways. The traditional means is by receipt of a bill at quarterly intervals, which reflects the previous three months' consumption (based on a recent meter reading or estimate). The arrival of an unpredictable bill sometimes led to debt problems, and the institution of a second mechanism, similar to a 'pay as you go' phone card. The meter is adapted to allow a flow of fuel only when a card has been charged by payment of money at a post office, shop or garage; once the amount of fuel credited on the card has been used, the meter stops the flow of fuel until the card is recharged. (This succeeds the more traditional coin in the slot meter, which served a similar purpose.) A higher proportion of consumers use prepayment for electricity than for gas (about 18% compared with 10%); and almost every prepayment gas user also prepays for electricity (i.e., the gas prepayers are a subset of electricity prepayment consumers, and their average income is lower, Cooke et al, 2001). Numbers of both have been increasing in recent years. Prepayment meters are more expensive for retailers, partly because the meter may cost a little more, but mainly because charging the cards involves frequent handling of cash payments. These higher costs are generally passed onto consumers, and almost all companies charge more for prepayment than for quarterly direct debit payment.

Alternatively, payment can be made by monthly direct debit (based on estimated annual consumption) from a householder's bank account, with annual settlements of any difference between annual and estimated consumption. This is cheaper for the retailers than the quarterly billing mechanism, and the 40% of households who use this method are usually offered discounts against the quarterly credit tariff.

When the residential markets were first opened to competition, the incumbents' final prices remained capped by the regulator. As more households switched suppliers, these price caps were gradually removed, and all ex ante price control was taken from retail prices in April 2002 (price caps have stayed in the monopoly transmission and distribution sectors). The regulator's duties themselves have changed since competition was introduced. As a result of the incoming Labour government's wide ranging review of utilities, instituted shortly after its election in 1997, the Utilities Act was passed in 2000. As well as imposing separate licensing of distribution and retail functions in electricity, it changed the primary duty of the regulator from ensuring that there was adequate finance for companies to undertake their regulated functions to protecting the interests of consumers 'wherever appropriate by promoting competition' (Utilities Act, 2000). The regulator was required to 'have regard to' the needs of consumers with low incomes, a new category for special consideration; it had previously been required to take account of the interests of the elderly, the disabled and chronically sick and those who live in rural areas. The Act also introduced a requirement for the regulator to take account of social and environmental guidance provided by the government, but not necessarily to act upon it. Thus the Act changed the emphasis of the regulator's role to focus on consumers in general and on income distributional considerations in particular. The implication that these objectives would generally be met through competition renders the analysis of consumer gains and benefits from competition particularly pertinent.

Competition in the residential market has concentrated heavily on price. Most of the advertising focuses on potential financial savings from switching rather than on other elements of service, and the regulator and consumer body have also concentrated on price. Although some other offers were made, e.g., store vouchers, particularly in the early stages, and some included an initial discount, price remains the dominant marketing feature, as shown in Table 1.

Table 1: Main offers on webpages: Contents of the first two pages for home energy consumers. 18th April 2003

Brand	Headline	Special offers	Green tariffs mentioned on first two pages?
London	Savings on gas and electricity		yes
Scottish Power	Help you save money		no
Npower	Calculated savings		yes
British Gas	Advice and services you need		no
Southern	Calculate your savings	Air miles	yes
Powergen	excellent customer service … how much you could save	For online switching	No, energy efficiency
SEEBOARD	New ways to save you energy		yes
SWALEC	Calculate your savings	Air miles, appliance discounts	no
SWEB	Savings on gas and electricity		yes
TXU	better value, prices and service.		No

Competition based on price was reflected in the main marketing media: doorstep and telephone selling. Around 3% of transfers have been 'erroneous', i.e., involuntary on the consumers' behalf, and the regulator, consumer body and industry are addressing this issue. Despite some well publicised difficulties, about 40% of consumers had switched supplier by 2003, some back to the incumbents, who maintain a market share of over 60% on average. The regulator has indicated that such switching levels indicate a healthy competitive market, with considerable potential cost savings for consumers.

3 Consumer Surveys and Earlier Results on Market Power

Two sets of surveys are used in this paper. The analysis of changes over time is based on a panel data of consumers who were interviewed in early 1998, early 1999 and in mid 2000. The original interviews were face to face in a module which formed part of an omnibus survey undertaken by the Office of National Statistics, and designed to be representative of the adult population of the United Kingdom. The survey covers several topic areas, not only energy. For the purposes of this paper, only responses from the 1685 householders in England, Wales and Scotland are relevant (i.e., excluding Northern Ireland). Responses from subsequent questionnaires were elicited by telephone from those who said they were willing to participate in future interviews. By 1999 the number of respondents had dropped to 863, and by 2000 to 468. Such an attrition rate raises concerns about the representativeness of the sample, which are exacerbated not only by the usual issues of selective response (those who have switched supplier are more likely to answer questions about the process) but by contamination of behaviour in an evolving market (those who have been asked about the process are more likely to participate in the market). The characteristics of the respondents in each round are shown in Table 2.

Table 2: Characteristics of households participating in each round of the panel survey

Survey Round	**1**	**2**	**3**
date	Jan 1998	Jan 1999	August 2000
Number of respondents	1685	863	468
Finished compulsory education	82%	87%	90%
Own house/mortgage	67%	75%	79%
1 adult	36%	28%	27%
2 adults	52%	56%	60%
No children	69%	65%	63%
1 or 2 children	25%	30%	32%
Pensioner households	21%	20%	18%
Prepayment electricity	12%	14%	9%
Switched electricity	n/a	5%	34%
*(national switching figures**	*n/a*	*3%*	*23%)*
Connected to gas	80%	80%	80%
Of whom switched	6%	23%	37%
*(national switching figures**	*5%*	*21%*	*29%)*
Prepayment gas	7%	9%	5%

*source: Ofgem, 2002

There is no significant difference in the mean of these characteristics between rounds 1 and 2. However by round 3 some attrition bias does appear; the households retained are those which tend to be more stable, i.e., those who have finished compulsory education, own their own house or are buying it with a mortgage, and are not single adults or pensioner households. Some corresponding and important energy related characteristics have also changed by the third round. In particular the number of prepayment customers represented has fallen sharply, while in the market as a whole the average level was rising throughout this period (reflected in the increase between rounds 1 and 2) and had reached levels of around 15% in electricity and 9% in gas by 2000. The number of switchers was also rising, and are shown in the table. As anticipated, switchers are over-represented in both rounds 2 and 3. There are two reasons for this. One is that the households who have stayed in the sample have characteristics which we know from other surveys mean they were more likely to have switched, particularly in these early days of competition (Ofgem, 2001). The other arises from direct bias in the methodology. In all three rounds of the survey, consumers who have switched are more likely to be interested in the process and in answering the questions. But the panel nature of the investigation introduces an additional bias, since the act of answering the questions will itself engender interest in the process, and make respondents, particularly those who had not already changed suppliers, more likely to do so before the next round of interviews. While these two effects mean that the sample over-represents switchers, there is no reason to believe that the characteristics of the switchers in the sample are different from those of switchers as a whole.

The panel survey includes the usual household and demographic characteristics, some of which are shown in Table 2. Households were asked questions about whether they could choose their suppliers in various utility markets, whether they had switched or were considering switching their energy suppliers, why (not), the importance which they attached to factors such as supplier reputation and savings, how long and how difficult they thought switching would be, the minimum savings they would require to switch, and their energy expenditure; they were also asked more general questions about their attitude to risk and whether they had changed telecom and insurance providers.

This paper extends earlier work (Giulietti, et al, 2003) on choices by gas consumers in round 2, by using the three rounds of the survey to identify the dynamics of the market. This had used a probit analysis for two dependent variables: having already switched supplier; and considering switching supplier, since the surveys were undertaken in the early days of the competitive market. Independent variables included household characteristics such as tenure and income, demographic variables, gas and electricity consumption and payment method, experience of switching in other markets and a variable to measure risk aversion. The static analysis explained switching and considering switching as a double hurdle model, where the decision to switch (or consider it) depended on awareness of the possibility. At this stage the electricity market was still in the process of opening, while all gas consumers had had a choice for at least six months. Both consumer switching choice and firm marketing expenditure were modeled as investment decisions. Consumers switched if they expected the savings which would accrue from the change to exceed their expected switching costs; and

companies focused their marketing efforts on consumers whose profitability (net of marketing) would be highest – thus reducing the search costs of those households. Potential consumer savings were calculated by finding the best savings which each consumer could have made by switching, given their incumbent supplier, consumption and payment characteristics (see Figure 2). Awareness of market opening was lower among pensioner households, those who used prepayment (probably because they received less marketing attention from entrants) and those who had not changed their telephone provider; and awareness increased with the length of time the market had been open, but at a decreasing rate.

The expected gains from switching were determined by the best savings available and the interaction of these savings with whether the consumer thought it likely that the incumbent would match prices (if so, the savings would not be expected to last for very long). Switching was more likely (contingent on awareness) amongst those with large potential savings, who thought savings and ease of switching important, but believed supplier reputation was unimportant, who lived in urban areas and had changed their car or house insurance in the last year. The probability that respondents were considering switching was affected by the same variables, and, in addition, whether they thought the incumbent was reluctant to match entrants' prices, if they had high income (but at a decreasing rate), and whether they had switched telecoms. They were less likely to consider switching if they were unable to say what their gas bill was and they thought it would take a long time to switch.

To investigate the actual gains which consumer made through switching, the difference between the incumbent's and the actual new bill is needed, rather than gains from the potentially most beneficial switch. To supplement the information contained in the panel survey, data from a much larger survey of 3,417 low income consumers, taken at about the same time as the third round of the panel data, were used. These had much of the same information about household characteristics, consumption, previous and current supplier as the panel data, but did not include questions either about attitudes or about the date at which switching occurred. The sample, commissioned for a study for the Electricity Association, was deliberately skewed to be representative of households who used prepayment electricity meters, and had very different characteristics from the contemporaneous panel survey, as Table 3 shows.

Table 3: Characteristics of panel survey round 3 and low income survey

Survey	**Panel, round 3**	**Low Income**
Number of respondents	468	3417
Own house/mortgage	79%	37%
1 adult	27%	36%
2 adults	60%	46%
no children	63%	55%
1 or 2 children	32%	35%
pensioners	18%	22%
Prepayment electricity	9%	61%
Switched electricity	34%	17%
Connected to gas mains	80%	86%
Switched gas	37%	26%
Prepayment gas	5%	34%

Compared with round 3, which had retained a disproportionate number of stable households, we see a much less settled sample; the high proportion of electricity prepayment meter users results directly from the survey design. This in turn leads to only about half as many house owners, more single adult and fewer two adult households. This survey was used to calculate the gains which consumers had made from switching.

3.1 Market Power

Giulietti, Waddams Price and Waterson identified the incumbent's market power as arising from the two sides of the consumers' 'cost benefit' calculation: *benefits* are the expected financial gains from switching and the *costs* are represented by the minimum savings required before a switch is made. The probit analyses showed how the expectation that the incumbent would match entrants' prices (which would render any gains short lived) affected the number of consumers who would switch, as shown in Figure 3. The upper line shows the proportion who will switch (according to the probit analysis) at different levels of monthly savings if no consumers believe that the incumbent will match. If half of the consumer believe matching will occur, the rate of switching is correspondingly lower for each level of savings available. (The intersection at 28% switching for no gain is partly an artifact of the base case chosen, but is supported to some extent by empirical evidence reported later). The incumbent's ability to maintain prices above that of his rivals depends crucially on whether his customers believe he will match competitors' prices. How expectations about matching change over time provides some measure of the dynamics of incumbent power.

Consumers' *costs* of switching are reflected in the minimum savings which they require to make before switching. They provide another measure of the incumbent's market power. Giulietti et al showed that, given the answers provided by gas consumers in round 2 of the panel data set, it would be profitable for the incumbent to maintain a price around 30% higher than that charged by entrants, even though he would thereby lose about 45% of the market. The analysis was based on the not unreasonable assumption

that entrants would price at their marginal cost, and that the incumbent's costs were similar to those of entrants. This result has distributional implications, if the non switchers are paying more and only the switchers gain, as well as for the welfare of the market as a whole.

4 Dynamics of the Opening Market

In comparing changes over time the group of respondents who had survived to round 3 were used as the base group; where responses in rounds 1 and 2 are compared with those in round 3, all responses are restricted to that relatively small group of survivors. First, changes in the two measures of market power referred to in the previous section, and then other changes, such as awareness of possibilities within the market, are identified.

Incumbents retain market power if those who do not switch believe (mistakenly) that the incumbent will match competitors' prices. Table 4 shows how these expectations had changed between early 1999 and mid 2000 among the 309 consumers who had not switched electricity supplier.

Table 4: Percentages of those who hadn't switched supplier (in each market) by mid 2000, who thought incumbent likely to match competitors' prices

	1999	2000
Gas:Likely to match	71%	78%
Unlikely to match	6%	7%
Don't know	23%	15%
Number of gas non switchers	*153*	*179*
Electricity: likely to match	49%	67%
Unlikely to match	27%	14%
Don't know	24%	19%
Number of electricity non switchers	*309*	*309*

Both groups, but particularly electricity non switchers, are becoming more confident that the incumbent will match (perhaps partly to justify their continued inaction in the market). However their beliefs are not supported by reality. The regulator, Ofgem, reported in late 2002 that there was little evidence of matching in either market, and indeed the gap seemed to be widening in gas (Ofgem, 2002).

This suggests that the incumbent's market power is increasing, since more consumers believe the incumbent will match, and so expected gains from switching for any price gap are lower. A similar story emerges on the cost side. Far from being prepared to switch for lower gains as experience of the market develops, there is weak evidence that the amount required is actually rising, particularly among non switchers in each round. This

is shown in Table 5. Of course consumers who switched between the two rounds are likely to have had a lower level of 'reserve savings' at which they would switch. We have controlled for this effect by considering separately only those who had not switched by round 3, and those who had done so, and who provided answers to the minimum savings questions in all three rounds. This reduces the sample numbers considerably, but avoids bias from non response.

Table 5: Minimum expected gains among switchers and non switchers at mid 2000, £s per month

		Early 1998	Early 1999	mid 2000
	Mean	9.9	9.5	13.9
Not switched by mid 2000	Standard deviation	9.4	7.9	11.8
	number	*185*	*185*	*185*
Switched before mid 2000	Mean	8.9	9.7	10.6
	Standard deviation	8.5	6.6	8.6
	number	*113*	*113*	*113*
Total	Mean	9.5	9.6	12.6
	Standard deviation	9.0	7.4	12.6
	number	*298*	*298*	*298*

Table 6 shows the correlation between the minimum required savings before switching for all consumers in each of rounds 1, 2 and 3 (reporting each pair of correlations only once).

Table 6: Correlations between Minimum Savings Required to Switch Suppliers

		electricity			**gas**		
	round	*1998*	*1999*	*2000*	*1998*	*1999*	*2000*
electricity	1998	1	0.307***	0.075	0.890***	0.148***	0.008
	number	*468*	*406*	*339*	*383*	*329*	*278*
	1999		1	-0.001	0.247***	0.794***	0.021
	number		*406*	*298*	*331*	*319*	*250*
	2000			1	0.096	0.044	0.718***
	number			*339*	*274*	*328*	*231*
gas	1998				1	.158***	0.030
	number				*383*	*328*	*231*
	1999					1	0.095
	number					*329*	*202*
	2000						1
	number						*278*

*** Correlation is significant at the 0.01 level (2 tailed)

There is a positive correlation between the amounts required to switch for each fuel within each round, and between the amounts required to switch in rounds 2 and 1, but little relationship between these earlier rounds and round 3, perhaps because of the greater time lapse before these questions were asked again. None of this suggests that the minimum amount which consumer require to switch is becoming smaller, and reducing the incumbents' power. If anything, movement seems to be in the opposite direction.

Other changes were also tracked over the period of the survey, including consumers' awareness of the choice of supplier. Analysis of awareness of gas choices in 1999 had shown that awareness increased with the length of time the market had been open, but at a decreasing rate, peaking at around 22 months. By mid 2000 the gas market had been open on average for around 30 months, and the electricity market for 17 months, so we would expect some decrease in awareness in gas, but still increasing awareness in electricity. Such expectations are supported by the results reported in Table 7, with awareness higher than in 2000 for electricity, but lower for gas. The higher awareness of switching that was possible in electricity in the earlier year results from a rapid market opening, in which publicity was not restricted to those consumers who first had the choice. The mistaken belief that consumers could choose their water supplier is interesting, and is not significantly related to whether or not consumers had switched gas or electricity supplier, nor the region where they lived. Not surprisingly, those who had not switched electricity supplier (and who we know therefore were supplied by the incumbent for their area) had very little idea who their supplier was, and many cited entrants when asked who supplied their electricity, while the answers of switchers were much more consistent.

Table 7: Response to 'Can you choose who supplies your….?'

	gas		**electricity**	
	1999	2000	1999	2000
Survey: yes	90%	84%	83%	92%
actual	100%	100%	Approx 50%	100%
		telecoms		**water**
		2000		2000
Survey:		85%		42%
actual		100%		0%

One purpose of the panel survey was to track the intentions and actions of respondents over the time period. Table 8 shows that the only significant relationship between intentions over the period and behaviour by the end of round 3 was in considering switching in rounds one and two, where the relationship was positive. In other words, consumers who were considering switching in round 1 were still doing so in round 2, but there is no evidence that they were more likely than others to have made the switch by round 3. The same pattern is evident from similar questions about gas.

Table 8: Correlations between considering switching electricity in rounds 1,2,3 and having switched in round 3

	Were you considering switching in			Had you switched by
	1998	1999	2000	2000
Were you considering switching in 1998	1	.210***	.000	.045
Were you considering switching in 1999		1	-.003	.005
Were you considering switching in 2000			1	-.040
Had you switched electricity by 2000				1

*** Correlation is significant at the 0.01 level (2 tailed)

5 Consumer Savings from Competition

Evolution of indicators of incumbent market power provides a rather pessimistic view of the developing market, particularly for those consumers who do not switch. If the incumbent is able to raise price above the level at which they would be capped if regulated, consumers who do not switch will lose from deregulation. At the same time the increasing concentration of the industry may mean that any reduction in the gap between incumbent and entrant prices is because entrants are able to raise price through exercising oligopoly power (joint dominance) rather than through the incumbent lowering its prices (unfortunately the counterfactual of what would have happened with continuing regulated monopoly is very difficult to determine given the volatility of upstream energy prices).

This section addresses the question of whether consumers have indeed been protected by promoting competition through identification of the savings they have made from switching supplier, using the larger survey of low income households, discussed in section 3 above. The purpose was not to calculate the maximum potential savings which could be made from switching, as described in section 3 and figure 1 above, but to calculate how much consumers had *actually* saved on their annual bills by switching. This process is depicted in figure 4, where at output q_t which is the current consumer use, the consumer has actually lost by switching, since the bill for that output level with the entrant is greater than with the incumbent. q_t itself was calculated from consumer reports of the size of their bills, their payment method and their supplier; from this could be estimated annual consumption since the tariffs are known for all suppliers, payment types and regions. Table 8 shows numbers who had lost and gained according to each payment method, assuming that they did not adjust their consumption level as a result of changing suppliers, i.e. that the elasticity of demand is zero.

Table 8: Financial gains and losses from switching suppliers amongst low income consumers

Payment method	prepayment	credit	monthly direct debit	total
Electricity: already switched suppliers				
Paying less	45%	44%	44%	45%
Paying more	42%	42%	41%	42%
No change	12%	13%	16%	14%
total	100%	100%	100%	100%
numbers	*137*	*153*	*101*	*391*
Electricity: arranged to switch suppliers				
Paying less	53%	72%	33%	59%
Paying more	47	28%	67%	41%
No change	0	0	0	0
total	100%	100%	100%	100%
numbers	*15*	*11*	*3*	*29*
Gas: already switched suppliers				
Paying less	21%	48%	44%	43%
Paying more	62%	36%	45%	43%
No change	17%	16%	11%	15%
total	100%	100%	100%	100%
numbers	*95*	*329*	*154*	*578*
Gas: arranged to switch suppliers				
Paying less	0	44%	67%	28%
Paying more	94%	44%	33%	62%
No change	6%	17%	0	10%
total	100%	100%	100%	100%
numbers	*16*	*17*	*6*	*39*

The most striking feature of Table 8 is the high proportion of switchers who seem to have switched to a higher cost supplier, at least at the level of expenditure which they report. This is not so surprising for prepayment customers, for whom there were few good offers from entrants (probably because the incumbent's prices, capped for longer in these markets, provided less headroom for profitable entry, see Otero and Waddams Price 2001). Indeed the lower switching rates among prepayment consumers were a rational response to the lack of opportunities. But this begs the question of why anyone should switch for a less good deal. One possibility may be that though the decision makes little sense at the time of the survey, it was rational at a different set of prices which predominated at the time of the survey. Analysis of the much smaller group who had arranged to switch (and therefore had made the decision very recently) might have revealed a higher proportion of gainers from the process. But Table 8, which identified this small number of consumers who have recently made the decision to switch, suggests an even higher proportion of 'bad decisions'.

Errors in calculating gains might also arise if consumers changed payment method at the same time as switching suppliers. While such changes occur, they are generally to adopt monthly direct debit. For these consumers we may underestimate their previous payments under a more expensive tariff, and so mistakenly overestimate their losses. But the proportion of winners and losers from switching is spread evenly across payment methods, suggesting that this is not a major explanation of the results.

Another possibility is that elasticity of demand is not zero, and consumers have changed their consumption since switching. They report only current bills, from which consumption is calculated from tariffs, and it is this level of consumption which has been used to calculate previous bills. It might be that taking account of a different previous consumption level the change of suppliers would be beneficial. The survey contains no information about previous consumption levels, but the potential effects can be assessed through a sensitivity analysis. Such an exercise is shown in Table 9. Three different 'sensitivity' levels are considered. These are that changes within 10%, 20% or 30% of the bill are each in turn regarded as representing no gains or losses. This reclassifies consumers who may have changed their consumption by a small amount or been inaccurate in reporting their energy expenditure. In effect this table classifies small gains and losses reported in Table 8 as zero.

Table 9: Financial gains and losses from switching electricity suppliers: sensitivity analysis of Table 8

		Allowing for variations of		
	Estimate from Table 8 final column	±10%	±20%	±30%
Paying less	45	12	1	1
Paying more	42	10	4	3
No change	14	78	95	97

Tables 8 and 9 do not at first sight seem to show that competition has brought great benefits, even to the consumers who have changed supplier, and at best renders considerably lower benefits than those calculated from best available offers in earlier work. Indeed the best assumption from these results seems to be that on average no benefits have accrued to consumers who have switched supplier.

Moreover, amongst those who have switched there is little evidence that vulnerable groups have gained more than others. Analysis which includes those groups shows little consistent pattern in the relationship between the gains from competition (positive or negative) and particular household characteristics. Any significant correlations from a straightforward bivariate comparison are shown in Table 10. The only consistent relationship is between social grade and gains, where in two groups out of six, those of higher social grade have gained more. Higher income groups have gained more from switching for prepayment electricity, but less for gas; larger household size generally increases gains, but lowers them for prepayment gas; and having adults based at home, owning ones own property and living in a house increase gains in some cases.

Table 10: Correlation between gains from switching and household characteristics:

Household characteristics	Gas: switched			Electricity: switched		
Payment method	PPM	credit	Monthly DD	PPM	credit	Monthly DD
income	-0.12*	-0.025	0.19	0.16*	0.042	0.14
Social grade	-0.045	0.14**	0.14	0.058	0.063	0.21**
Household size	-0.13**	0.080	0.20**	0.15*	0.097	0.17*
adults home (not working)	-0.047	-0.003	0.033	0.14*	0.132	0.078
Owner	-0.045	0.061	0.18*	0.022	-0.019	0.14
house	-0.036	0.11	0.18*	0.018	-0.088	0.062
South	-0.037	-0.064	-0.15	-0.030	0.022	-0.10

In general this research does not indicate that consumers in aggregate have benefited from the competitive process, or that the market was becoming more competitive in its early days. Measures of market power show no sign of becoming more favourable, and awareness of competitive opportunities seems to have fallen in the gas market. Since the survey was undertaken, the gap between the incumbents' and entrants' prices shows no sign of narrowing, and switching seems to have settled at a rate which leaves incumbents with more than 60% of the residential market. In 2003 the regulator reported that awareness of competition was falling (Ofgem, 2003) and the consumer watchdog noted signs that companies were competing less aggressively to acquire new consumers (energywatch, 2003). There is no evidence that the groups for whose interests the regulator has special responsibilities have benefited any more from this process than the average.

Since it is doubtful even whether consumers have benefited from competition, it is very difficult to argue that overall welfare has increased. Companies spend around £60 to recruit each switcher (Giulietti et al., 2003), which is effectively a dead weight loss. So far the process of extending competition to residential markets has almost certainly reduced overall welfare. It has introduced some innovations, for example in tariff structures, and these and other changes may eventually justify the process. But these benefits will have to be substantial to overcome the costs which this paper identifies have accrued to administrators, participating firms and consumers in the early years.

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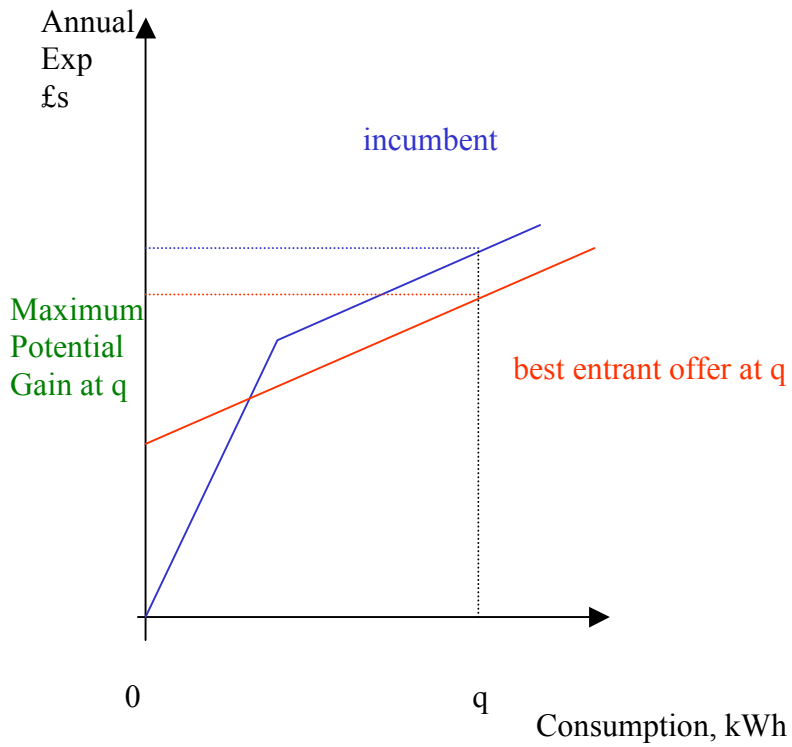
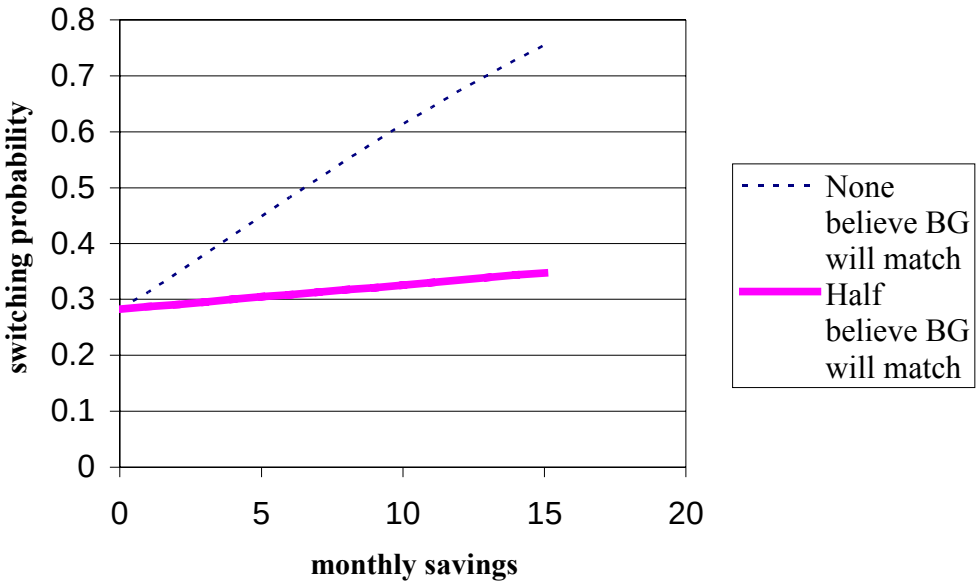
Figure 2: maximum potential savings from switching



The incumbent's tariff is represented by the kinked line, indicating a two part tariff with no fixed charge, and q the consumption level before switching. The straight line represents the cheapest entrant at consumption level q (a tariff with a fixed charge and a single running rate). The gap between the lines shows the maximum saving available to the consumer if consumption stays at level q.

Figure 3: Switching probability under different assumptions



Source: Giulietti, Waddams Price and Waterson, 2003

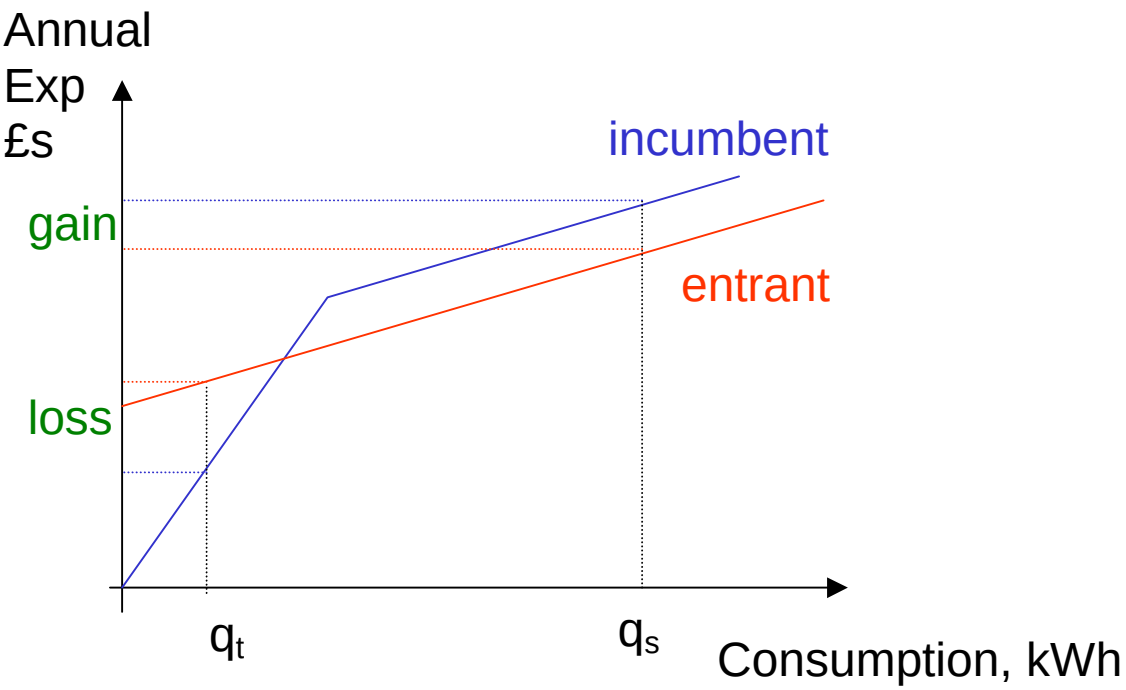


Figure 4: Actual Savings from Switching