

WHY THE RE-INTRODUCTION OF PRICE CONTROL REGULATION IS THE ONLY
REMEDY WHICH WILL WORK FOR DOMESTIC ENERGY CONSUMERS

SUMMARY POINTS FROM EVIDENCE

Our first conclusion responds to the Committee's questions about the competitiveness of the UK's retail energy markets. We believe that our evidence demonstrates two main points: (a) that the market structure which has evolved is anti-competitive and (b) that any amount of switching by retail consumers has and will fail to change this. In particular, litmus tests for the anti-competitiveness of the market structure are not only concerned with market concentration. As we demonstrate in considerable detail, the companies involved in the market have arranged their affairs so that they can sustain high and rising profits *whatever the level of their final prices to households and small businesses*. Corroboration of this and of the ineffectiveness of switching is that companies can be observed to make more money with lesser number of customers—hardly a punishment for causing their customers to switch.

A second conclusion addresses the Committee's concerns about wholesale markets. Our evidence demonstrates how UK households are paying higher gas and electricity prices as a result of the increased uncertainty which liberalised wholesale gas markets entail and reflect, imposing an insurance premium on



consumers which is highly sensitive to the actual and perceived risks of shortfalls in supply over winter months. Moreover, policy has contributed to this problem by failing to ensure that sufficient gas storage be built in a timely fashion.

Our third conclusion identifies areas of regulatory oversight. Apart from the anti-competitive structure of the UK's domestic gas and electricity markets, there is also evidence of actual anti-competitive *behaviour*. There is evidence of both gas prices to households being raised by more than might be justified by increasing wholesale prices and of electricity consumers being discriminated against. While this evidence is from one company, this is only because there is only one company which discloses sufficient information to consider these issues. All companies have the ability to vary the mark-up on wholesale, transportation and supply costs, according to market conditions and specifically, to discriminate between gas and electricity customers in order to protect the overall margin; only lack of company-sourced data prevents us from ascertaining how frequently other supply companies exercise this option.

Our final conclusion is that it is the domestic consumer who is most vulnerable to the deployments of companies' market power which we have identified—the domestic consumer is at the end of the chain and thereby the ultimate recipient of price risk as it is passed down the chain. However, this does not also mean that we see a remedy in the break up of the portfolios which companies have built up in order to manage their risks. Indeed such a break-up could have serious consequences for prices if it increased uncertainty and undermined the capacity of supply companies to contract for eg the large volumes of imported gas which the country will increasingly require. Instead we would propose the re-introduction of price control regulation as the only way of ensuring that households and small businesses are not exploited. Moreover, it may well be, bearing in mind the large investments in electricity generation capacity which companies are being supplicated to undertake, that rate of return regulation would be a better option than the previously favoured price-cap form of price control regulation.

WHY THE RE-INTRODUCTION OF PRICE CONTROL REGULATION IS THE ONLY REMEDY WHICH WILL WORK FOR DOMESTIC ENERGY CONSUMERS⁴⁰⁶

This evidence directly addresses the first 6 out of the 7 questions posed by the committee. It only addresses fuel poverty policy by way of the remedy suggested for addressing market structure and market power.

1. THE SYMPTOMS OF PROBLEMS IN THE UK'S ENERGY MARKETS

Rising Consumer Expenditure on Gas and Electricity

Between January 2003 and December 2006, the expenditure by UK households on electricity and gas increased by 71.7% whereas over the same period the consumption of these domestic fuels fell by 4.2% (Table 1). Since then, price reductions during 2007 have been followed by further increases in early 2008 and it therefore seems likely that total expenditure will have increased further since the publication of the data in Table 1.

Table 1

EXPENDITURE ON AND CONSUMPTION OF ELECTRICITY AND GAS BY UK HOUSEHOLDS

	<i>Expenditure £m</i>			<i>Consumption GWh</i>		
	<i>Electricity</i>	<i>Gas</i>	<i>Total</i>	<i>Electricity</i>	<i>Gas</i>	<i>Total</i>
2003	7,660	6,260	13,920	115,761	386,486	502,247
2004	9,120	8,285	17,405	115,526	396,411	511,937
2005	10,205	9,195	19,400	116,811	384,009	500,820
2006	12,375	11,520	23,895	116,449	364,555	481,004
% Change 2003–06	61.6	84.0	71.7	0.6	–5.7	–4.2

Source: Digest of UK Energy Statistics, Tables 1.1.6, 4.2 and 5.2

The onset of this rapid increase in the burden of household expenditure on fuel which has pushed an additional 2.5 million households into “fuel poverty” (*Financial Times* 2008a) has broadly coincided with the final removal of all domestic price regulation (April 2002). In short, full “competition” has been accompanied by rapidly rising fuel prices. Moreover, there are strong indications that household expenditure on electricity and gas is likely to increase further as we move into the next decade, with even more serious implications for household fuel poverty—an issue we shall return to briefly in the concluding section of this evidence.

⁴⁰⁶ The domestic market for energy supply is variously described as “retail” (of which it is a part), “household” or “residential”. In our evidence we use “domestic” to refer to the residential or household sector of the retail market (the other part of the retail market consists of small businesses and other organisations paying posted retail tariffs)—except when quoting company documents where we retain their original vocabulary.



Figures 1 and 2 subtract the annual rate of inflation from the annual increase in gas and electricity prices and the black-shaded columns therefore show the extent to which gas and electricity prices have been rising faster than inflation. Since the complete deregulation of all domestic gas and electricity prices the story has mainly been of these prices rising faster than inflation (rising in “real terms”): whereas the previous regulatory regime generally resulted in consistently falling real prices. Let it also be said at this stage that any solace which OFGEM and BERR may take from any one of the possible country rankings (permutations in euros, purchasing power parity, with or without various taxes, for particular groups of consumers) of UK domestic gas and electricity prices in EU league tables is misplaced: in particular, unlike most other EU states our gas has mainly been supplied from our own offshore resources not imported by pipeline from Siberia and by ship from other places more distant than the UKCS. We should therefore expect to have gas among the cheapest in Europe. As far as domestic electricity prices (excluding taxes) are concerned the UK is consistently more expensive than the “unliberalised” markets of France and Greece, and the latest Eurostat data place the UK above the EU average.

Figure 1

UK DOMESTIC GAS PRICES AND INFLATION

FIGURE 1: GAS PRICES TO DOMESTIC CONSUMERS 1986 - 2007

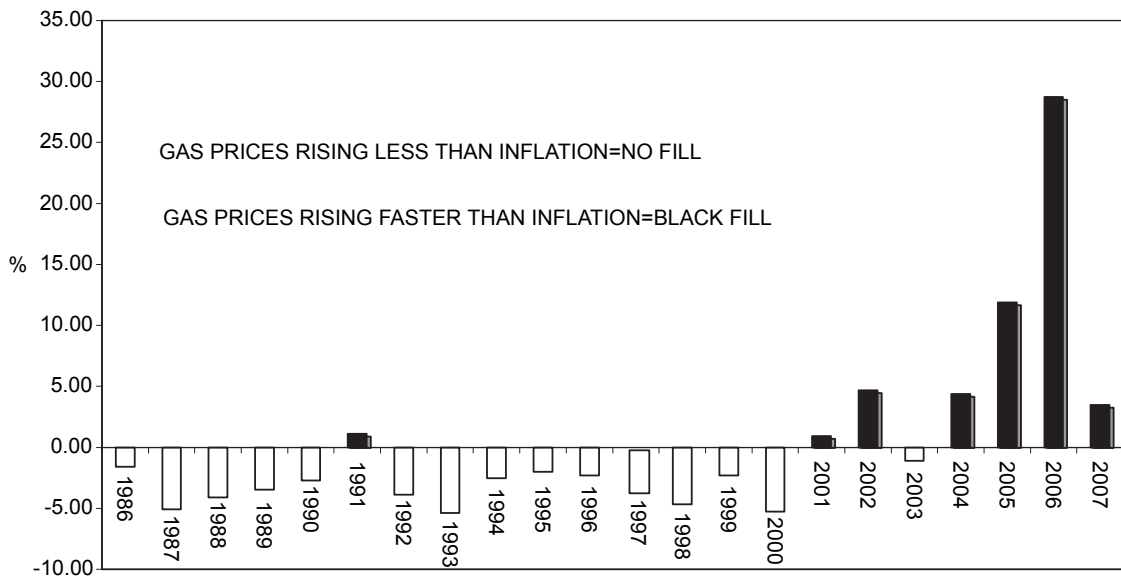
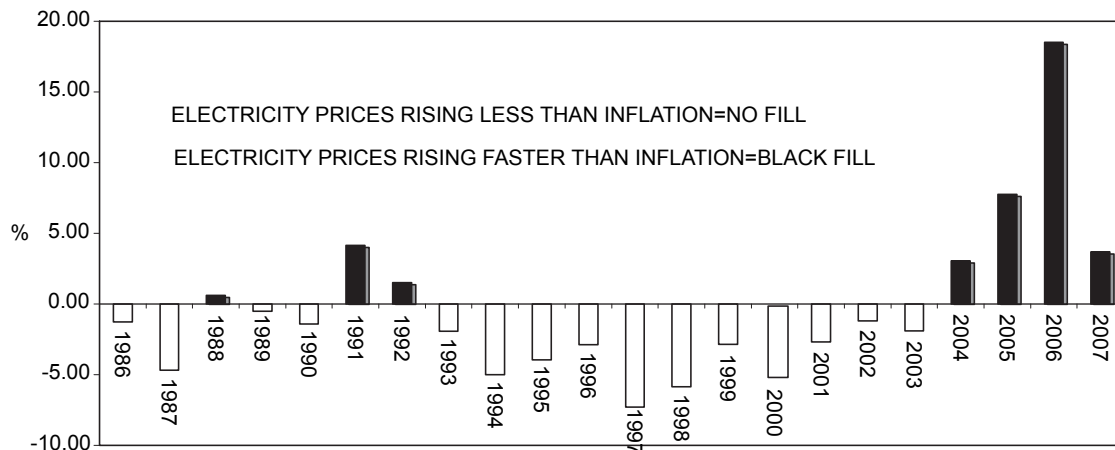


Figure 2

UK DOMESTIC ELECTRICITY PRICES AND INFLATION

FIGURE 2: ELECTRICITY PRICES TO DOMESTIC CONSUMERS 1986-2007



Source for Figures 1 and 2: *BERR Quarterly Energy Prices*, Table 2.1.1

Note: the gas and electricity prices used in constructing these Figures are the RPI fuel components exclusive of VAT

Company Profits Increase Despite Flat Demand

While consumers have been experiencing the pain of these price increases, energy company profits have been growing strongly (Table 2). Moreover, while some companies possess regulated gas and electricity transmission and distribution businesses, it is profits from their non-regulated businesses in the “competitive” part of the market which have been growing most rapidly (Tables 3 and 4).

Table 2

TOTAL OPERATING PROFITS OF THE DOMESTIC ENERGY SUPPLY COMPANIES FROM ALL THEIR UK ENERGY BUSINESSES, 2003–2006/07

	2003	2004	2005	2006	2007
Centrica plc	872	989	1,335	1,198	1,745
EDF Energy plc	517	521	587	647	n/a
E.ON UK plc	583	642	741	710	778
RWE npower	496	411	299	348	496
Iberdrola (Scottish Power)	495	597	739	955	n/a
SSE plc	680	790	887	1,081	n/a
Total	3,643	3,950	4,589	4,939	n/a

Sources for Tables 2, 3, and 4: see Appendix for sources and methodology

Notes: As with all the succeeding tables containing company-sourced information, the data have been aligned so that there is maximum overlap between the different financial years used by the companies: data from those companies with financial years ending in March have been aligned with data from those whose financial year ended the preceding December, eg the year ending March 2007 is aligned with the year ending December 2006.

Table 3

OPERATING PROFITS OF THE DOMESTIC ENERGY SUPPLY COMPANIES FROM THEIR REGULATED BUSINESSES, 2003–2006/07

	2003	2004	2005	2006	2007
EDF Energy plc	394	392	415	484	n/a
E.ON UK plc	155	323	350	334	349
Iberdrola (Scottish Power)	394	416	525	524	n/a
SSE plc	318	325	373	349	n/a
Total	1,260	1,456	1,662	1,691	n/a



Table 4

OPERATING PROFITS OF THE DOMESTIC ENERGY SUPPLY
COMPANIES FROM THEIR NON-REGULATED BUSINESSES, 2003–2006/07

	2003	2004	2005	2006	2007
Centrica plc	872	989	1,335	1,198	1,745
EDF Energy plc	126	164	151	117	n/a
E.ON UK plc	402	499	539	586	522
RWE npower	496	411	299	348	496
Iberdrola (Scottish Power)	101	181	214	431	n/a
SSE plc	363	466	523	740	n/a
Total	2,360	2,709	3,061	3,420	n/a

Between 2003 and 2006, the total operating profits from UK energy operations of the 6 domestic energy suppliers increased by 35.6%. For the three companies for which 2007 data is available the increase between 2003 and 2007 was 54.7%. Operating profits from regulated operations (electricity and gas distribution) increased by 34.2% between 2003 and 2006 while operating profits from non-regulated operations (gas production, electricity generation, gas storage, energy trading, energy supply to all customers, energy-related services), increased by 44.9%.

Relating these substantial increases in operating profit to the post-tax, post-net interest earnings attributable to the companies' shareholders is more difficult. Only three of the above companies provide sufficiently comparable data on this subject. Moreover data for the year 2007 is currently only available for one company (Centrica). Since such data relates to *all* the companies' operations including foreign and non-energy operations we can only interpret the figures with considerable caution. With these caveats in mind, Table 5 displays post-tax "adjusted" earnings per share ("adjusted"—as with the operating profit data shown above—meaning before exceptional items and re-measurements of certain derivatives) and the proportion of their total operating profits contributed by UK energy operations.

Table 5

ADJUSTED EARNINGS PER SHARE (PENCE) AND PROPORTION OF TOTAL
OPERATING PROFIT ATTRIBUTABLE TO UK ENERGY OPERATIONS, 2003–07

	2003	2004	2005	2006	2007
Centrica	16.80p (80.4)	20.00p (80.6)	18.20p (88.2)	19.40p (83.1)	30.60p (89.5)
Scottish Power	36.40p (43.0)	36.20p (89.9)	44.10p (88.7)	47.17p (85.7)	n/a
SSE	55.30p (88.2)	62.80p (88.5)	72.90p (89.8)	92.50p (89.5)	n/a

Source: Annual Reports and Accounts of Centrica plc, Scottish Power Ltd, Scottish Power plc and SSE plc

Note: The data in parentheses are the proportions of total operating profits contributed by UK operations.

From this data we can conclude that aggregate earnings per share for the three companies in question increased by 46.6% between 2003 and 2006, while Centrica's EPS increased by 82.1% between 2003 and 2007.

2. EXPLANATIONS FROM OFGEM AND BERR

In response to the substantial real price increases experienced by UK domestic consumers and in particular the evidence that "Britain's vaunted competitive energy market—often held up to other EU states as a model—is not serving all parts of society". (*Financial Times*, 2008b) OFGEM and the Department for BERR have, in a variety of different documents over the past few years, advanced the following propositions:

- (1) The UK's domestic energy market remains highly competitive as evidenced by customers switching suppliers (OFGEM, 2006a; 2006b) and the fact that, measured by a range of additional structural indicators (regulated third party access to transportation infrastructure, transparent wholesale markets etc) the UK has the "most competitive" energy market among the EU and G7 countries (BERR/OXERA, 2007a; 2007b). By implication therefore, *the steep rise in domestic energy prices cannot be attributed to any particular structural features of that market or the exercise of market power on the part of the supply companies.*
- (2) While certain environmental charges have necessarily been added to the retail price of gas and electricity, *the primary cause of fuel price inflation has been the substantial increase in wholesale electricity and gas prices* with the rising gas price feeding through to electricity prices via gas-fired electricity generation (OFGEM, 2006a). We are therefore invited to infer that the companies which supply gas and electricity to domestic customers are themselves the "victims" of these wholesale price increases, a proportion of which they reluctantly pass-on.



- (3) *UK wholesale gas prices only increased because they became linked to “unliberalised” oil-price indexed prices* in mainland Europe as a result of the physical linkage of markets via new pipelines and the fact that the UK has recently become a net gas importer (OFGEM, 2006a).

Bearing in mind these explanations we shall now investigate the issues of concern to the BERR Committee enquiry, starting with the fundamental question of the nature of competition in the UK’s energy markets. To what extent has the structure of the UK domestic energy supply industry become intrinsically uncompetitive and is there evidence that this structure has resulted in actual uncompetitive behaviour?⁴⁰⁷

3. MARKET STRUCTURE AND COMPETITION IN THE DOMESTIC MARKETS FOR GAS AND ELECTRICITY

Initial Expectations

At the time when the UK domestic energy supply industry was moving from regulation to competition (1996–2002) it was generally envisaged that the market would become dominated by a large number of independent “pure” supply companies,⁴⁰⁸ and that prices would continue to fall and generally, remain low in historical terms. The business would be intrinsically a risky one for the competing companies, but they would be able to hedge their purchases and sales in what was expected to be a deep and liquid futures and forwards (OTC) market. In the event this “deep and liquid” secondary market failed to materialise, partly because of the disappearance of the “mega-BTU marketers” like Enron and TXU who would have constituted the substantial counter-parties required, had they survived. Nevertheless, competition in the UK’s domestic energy supply business did appear to deliver decreasing real gas and electricity prices during the years 1997–2002. However, the extent to which competition *per se*, was responsible for these exceptionally low prices has been greatly exaggerated; these were also years of excess energy supplies worldwide and the specific characteristics of energy privatisation and liberalisation in the UK led to a massive over-production of gas during the earlier part of this period (IEA, 1998) and a massive over-capacity in electricity generation in the latter part (Rutledge, 2007). The “asset-sweating” regulation of transmission and distribution was also responsible for delivering a large part of the reductions in prices which domestic consumers experienced at this time.

However, this transient success from a consumer perspective also drove a company response concerned to create an industry structure which would mitigate the risks associated with the combination of over capacity, extreme exposure to price risk and very low (and volatile) wholesale market prices. This new structure “could not be described as anything other than a vertically-integrated oligopoly” (Helm 2003, p 311).⁴⁰⁹ As we shall see, this characterisation by Helm has become even more appropriate since 2003. More important though is how it has functioned to the detriment of domestic consumers.

The Development of Oligopoly since 2000

Oligopoly—the domination of a market by a small group of companies—developed in the UK energy supply industry over a relatively short period of time (2001–04). In 2000 there were 28 gas suppliers licensed to operate in the domestic market of Great Britain, 16 of which were said to be “active”. Similarly there were 20 licensed electricity supply companies of which 13 were “active”. (OFGEM, 2001a).

Commenting on this relatively happy state of affairs and having observed that, “the number of competing suppliers and changes in the number can be a useful indicator of the degree of competition”, OFGEM noted that:

“Since October 2000, the number of licences granted to . . . suppliers has increased significantly. This can be mainly attributed to the entrance of new companies into the market, which will effectively serve to aid the development of competition”. (OFGEM, 2001a, p 61)

However within a mere three years, a dramatic industry concentration had taken place. According to one industry source, by 2004, just six supply companies served 95% of the domestic and small business electricity sector, while the same six companies served 99% of the domestic (only) gas and electricity sectors. The same source described the market as “highly concentrated” (EDF, 2004). Today those same six companies dominate the totality of the domestic gas and electricity markets.

⁴⁰⁷ In this respect we adopt the traditional “structure-conduct-performance” paradigm of industrial economics, see Sawyer (1985).

⁴⁰⁸ A “supply” company is one that simply buys energy wholesale and sells retail without having any other midstream or upstream energy operations. Sometimes the term “marketing company” is used as an alternative.

⁴⁰⁹ Although, the originally state-controlled energy monopolies were broken up (or encouraged to break-up) in the years after privatisation it was highly predictable, according to “transaction cost” theory, that such an industry would soon seek new modalities of concentration and re-integration; see Rutledge (2007).



Table 6

NUMBER OF ACTIVE DOMESTIC ENERGY SUPPLIERS
IN GREAT BRITAIN 2000–06

	2000	2006
Active Gas Supply Companies	16	6
Active Electricity Supply Companies	13	6

Source: OFGEM (2001a), OFGEM (2006b)

Since, as we have noted, OFGEM regards “the number . . . and *changes in the number*” (our emphasis) of supply companies as “a useful indicator of the degree of competition”, it is difficult to see how OFGEM or anyone else can avoid the logical conclusion that the UK domestic energy supply business has become much less “competitive” than it was in eight years ago.

From this we cannot conclude *a priori* that the six UK domestic energy supply companies are able to use market power to raise retail prices above levels which are putatively competitive. There are four potential constraints on oligopolies exercising such market power. Firstly, if the market for the particular commodity being supplied is price-elastic (a percentage increase in price results in a larger percentage fall in demand) the incumbent companies would be constrained from raising prices by the expectation of lower total revenues. Secondly if there are few barriers to entry, even a small dominant group of companies might fear that raising prices—and profits—will attract new entrants who would drive prices back to lower levels. Thirdly, if each company in the oligopoly has reason to believe that if it unilaterally increases prices the other companies will refrain from following and it will consequently be “left out on a limb” losing significant market share (and profit), this *individual* company fear will inhibit the oligopoly *collectively* from exercising its potential market power. Finally, a fourth potential constraint on the exercise of market power by an oligopoly is the government and its agencies: if the companies have reason to believe they will be punished—whether by some kind of “windfall tax” or price control—if they increase prices above levels which are generally considered by society to be “reasonable”, they will obviously refrain from doing so.

Unfortunately, in the case of the UK domestic energy supply industry none of these four constraints apply. Firstly, domestic consumer demand for gas and electricity is highly inelastic—we all require a certain minimum level of heating, warmth and light whatever their prices: there are no substitutes for these “commodities”. Neither can we hedge by switching between the different fuels: if electricity were to suddenly be offered to us at a much lower price we cannot switch our gas central heating systems or gas ovens to electricity except in the very long-term.⁴¹⁰

Secondly, in today’s highly concentrated domestic supply industry there are formidable barriers to entry: the six incumbent companies have spent considerable sums investing in the latest technology to handle millions of customers (Centrica’s bill for this was around £200 million). In order to compete with the incumbent six companies a new entrant would have to make the same kind of investment virtually overnight while at the same time offering retail prices which were substantially below all the existing suppliers. This kind of scenario can reasonably be discounted.

With respect to the third caveat, on every occasion that one of the companies has raised its domestic electricity and gas prices the others have, sooner or later, followed. They may have raised prices by different amounts and at slightly different times, but this herd-like behaviour is now so well institutionalised that none of the companies has any fear that by raising prices it will become isolated and thereby lose *significant* market share.

Fourthly, so far, and based on previous experience, the companies would appear to have absolutely no reason to fear that the State will intervene if they raise prices. Such an intervention has only occurred once (the 1997 Windfall Tax) and this was primarily a response to the manner in which the energy companies had been sold off cheaply at privatisation. It should also be noted that since then, the Government, OFGEM and BERR have repeatedly eulogised the UK’s *laissez faire* energy industry model. They are deeply committed to it as an ideological project. Any intervention in the market by these bodies would therefore be interpreted as an acknowledgement that the model has failed. This view seems to be confirmed by the failure to announce any serious attempt to restrain domestic energy prices in the March 2008 Budget.

Gas Storage

Some final remarks should be added regarding the market structure of natural gas storage. This sector was originally regulated as part of British Gas Corporation plc, and subsequently BG plc but in 2000, gas storage (with the exception of LNG storage) was de-regulated in the erroneous belief that the sector was potentially competitive. (It wasn’t because the three existing storage facilities had very different technical profiles such that they can not compete with one another). In 2000–01 OFGEM required the two largest facilities, Rough and Hornsea, to auction their storage space and at the time the prices received at the auctions were exceptionally low. Subsequently BG plc sold both facilities which by 2002 had passed into the

⁴¹⁰ We discuss the price elasticity of demand for individual supply companies below.



hands of Centrica and SSE respectively. By the following year, these two facilities accounted for around 88% of total UK gas storage space (Wright, 2006, p 31) but in reality, Centrica (Rough) controlled 100% of long-term (seasonal) storage space while SSE (Hornsea) controlled 69% of mid-term storage space. In effect the former was now a monopoly and the latter the dominant player in a market which contained only two other very small players, Scottish Power (Hatfield Moor) and EDF (Hole House). Once it became evident that the UK's own gas supply was rapidly depleting and the country was becoming dependent on imports, storage prices more than trebled. In short, this sector remains almost totally uncompetitive and the consequent rapid rise in storage prices has contributed to the upward movement of domestic natural gas prices.

Oligopoly plus Vertical Integration

Responding to the extremely difficult market conditions experienced by the UK energy industry in the years 1997–2001 as described above, by 2002 a wave of disposals and acquisitions had largely taken place which resulted in an industry which was highly integrated both horizontally and vertically. By 2007 this had produced an industry structure as illustrated in Figure 3.

Figure 3

UK ENERGY INDUSTRY COMPANY PORTFOLIOS 2007

Company	Companies with Domestic Supply Operations								
	Upstream			Mid-Stream			Downstream		
	Gas Production	Electricity Generation	Wholesale Trading	Transmission	Distribution	Gas Storage	Domestic Supply	Non-Domestic Supply	
Centrica (British Gas)	g	e	g e			g	g e	g e	
SSE		e	g e	e	g	g	g e	g e	
Iberdrola (Scottish Power)		e	g e	e	e	g (minor)	g e	g e	
E.ON UK	g (minor)	e	g e		e	g (Minor)	g e	g e	
RWE npower		e	g e				g e	g e	
EDF Energy		e	g e		e	g (minor)	g e	g e	
Companies without Domestic Supply Operations									
	Upstream			Mid-Stream			Downstream		
National Grid				g e	g	g			
British Energy		e	e				e		
Drax Group		e	e (minor)				e		
International Power		e	e				e		
Others	g	e	g e		g		g e		

Source: Author research. "Others" includes major upstream gas producers, small electricity generators and independent suppliers to non-domestic customers

Note: g indicates ownership of gas assets; e indicates ownership of electricity assets

The principal exceptions to this trend were British Energy plc (nuclear power) and National Grid plc (formed out the merger of BG Transco (gas transmission) with the National Grid Company (electricity transmission). National Grid is prevented by its licence from owning energy supply companies (and visa-versa) and this has been the only form of vertical integration proscribed by the Government, OFGEM and BERR. It is argued that such "ownership unbundling" allows fully effective third party access to the transmission sector which in turn enables vigorous supply competition to take place. As we shall see, this confidence in the creation of a hypothetically competitive industrial structure for the UK's energy market has been entirely misplaced.

If one wishes to understand the working of the UK domestic energy market and the prices emanating from that market then the crucially important form of vertical integration is not that between transmission and supply but between "upstream" (gas production and electricity generation) and "downstream" supply as we shall now demonstrate.⁴¹¹

Table 7 shows the extent of "physical" integration between these two segments for Centrica, the only company which is a significant gas producer while Table 8 shows the extent of physical integration between electricity generation and small customer supply for each of the six domestic electricity suppliers.

⁴¹¹ The BERR/OXERA report referred to above which affirms that the UK has the "most competitive" energy market in the EU/G7 countries virtually ignores the question of vertical integration. Only a brief reference to the subject suggesting practical difficulties in obtaining data is included in Section A3.3 of the report (BERR/OXERA, 2007a, p 72).



Table 7

RATIO OF OWN GAS PRODUCTION TO DOMESTIC GAS
SUPPLY VOLUMES (CENTRICA), 2003–07

	2003	2004	2005	2006	2007
Centrica	0.50	0.53	0.46	0.31	0.42

Source: Centrica plc, Annual Reports and Accounts

Table 8

RATIO OF OWN ELECTRICITY GENERATED TO DOMESTIC AND
SME ELECTRICITY SUPPLY VOLUMES, 2003–2006/07

	2003	2004	2005	2006	2007
Centrica	0.34	0.46	0.47	0.61	0.86
EDF Energy	n/a	n/a	n/a	1.28	n/a
E.ON UK	n/a	1.2	1.31	1.32	1.32e
Scottish Power	n/a	n/a	n/a	0.90	n/a
RWE npower	1.51	1.44	1.50	1.64	1.52
SSE	n/a	n/a	n/a	1.77	n/a

Sources: see Appendix

Notes: SME = Small & Medium Enterprises

Supply volumes for Centrica: domestic customers only

Supply volumes for EDF: domestic and SME customers

Supply volumes for E.ON: domestic customers only

Supply volumes for Iberdrola: all customers (excluding “exports” to England)

Supply volumes for RWE npower: domestic and commercial customers

Supply volumes for SSE: domestic and SME customers

From Table 7 it can be seen that Centrica can supply between 31 and 53% of its “British Gas” domestic gas consumers. However, there is some indication that Centrica is finding it harder to satisfy this sector from its own resources and the company is known to be searching for additional gas reserves through acquisitions.

Table 8 shows the extent to which the companies’ own electricity generation operations can cover the requirements of their domestic and SME customers. In the case of both Centrica and E.ON UK, by 2006–07 the in-house generation assets of these two companies could supply 86% and 132% respectively of the requirements of their domestic (only) electricity supply customers. With respect to the remaining four companies, the supply data relate to both domestic and SME customers but since the percentage of their domestic and SME customers’ requirements covered by the companies equity generation ranges from 90% to 177% it seems fairly clear that they can easily serve the needs of their domestic customers alone from their own generation.

That the companies see this kind of vertical integration as being very important is evident from remarks taken from company documents. For example, referring to its UK operations in 2004, EDF Group states that its strategy was:

“to develop a vertically-integrated operation by acquiring an electricity generating capacity which would fully cover its residential clients, seeking to optimise the total margin between Sales Revenue and Production”. (EDF, *Document de Base 2004*, p 136)

By 2006, it had achieved this objective, stating:

“The output from EDF Energy’s generation plants broadly covers the customer demand from EDF Energy’s SME and residential customers, while demand from large business customers . . . is covered through wholesale market purchases”. (EDF, *Document de Reference, 2006*, p 72)

Similarly, although it has clearly not reached the degree of vertical integration achieved by EDF, Centrica states that:

“Upstream we will continue to pursue the ideal integration position to support a business with our levels of demand in gas and electricity”. (Centrica, *Annual Report & Accounts, 2005*)

Indeed, all six of the UK energy supply companies have, on various occasions, stated that vertical integration is their objective.



The motivation for this kind of vertical integration is clear: in the absence of sufficiently deep and liquid financial hedging markets, the companies have resorted to physical hedging instead—vertical integration provides that physical hedge as the companies themselves have stated. Thus for, example, in 2003, having recently acquired Powergen, E.ON stated:

“Powergen’s exposure to low wholesale electricity prices in the UK is partially hedged by the balance provided by its recently expanded retail business”. (E.ON AG, *Annual Report on Form 20-F*, 2003, p 76)

However, two years’ later, with market conditions considerably changed, the company notes that, “E.ON UK’s exposure to [rising] wholesale prices in the UK is partially hedged by its retail business”, while on the same page stating,

“In response to these increases in wholesale prices UK suppliers including E.ON increased their retail electricity prices a number of times during 2005”. (E.ON AG, *Annual Report on Form 20-F*, 2005, p 62).

In similar vein, EDF states that:

“Due to the vertically integrated nature of the Group, the electricity demand from the retail business provides a natural hedge for the electricity procured from the generation business. (EDF Energy plc, *Annual Report & Accounts*, 2005, p 27)

while in the same report EDF UK states:

“Despite exceptional rises in the energy market prices in 2005, the Group has managed to limit the rise of its energy costs to 29% compared to a market rise of 67% in gas and 70% in electricity on year (price rises based on average day ahead prices on the spot market between 2004 and 2005). The Group has achieved this through vertical integration and a hedging strategy implemented together with EDF Trading, a sister organisation of the Group”. (EDF Energy plc, *Annual Report & Accounts*, 2005, p 2).

Taking this “textual” evidence together, we can draw the following conclusions:

- (1) When wholesale electricity prices are falling steeply (as in 2002) vertically integrated companies can increase the profits of their supply businesses by maintaining retail prices to domestic customers at existing levels, or perhaps lowering them only after a considerable lag, or by only a small proportion of the wholesale price decline. The latter also appears to have been the case with Centrica and falling wholesale gas prices in the first part of 2007.
- (2) When wholesale prices are rising steeply, companies can pass on all or part of this burden to their retail domestic customers who are effectively, “captive” for a period of time. (And since all or most of the companies are raising their domestic prices, customers will be uncertain as to whether to “switch” and which supplier is likely to remain the most attractive for the foreseeable future.)
- (3) While companies may quote public domain wholesale prices in justifying their retail price increases, they may not actually be paying these prices (cf the above EDF quotation.). Indeed, in general, wholesale prices today, this week or this month do not reflect the cost of gas delivered today, this week or this month. Suppliers contract for their gas years and months ahead of the gas delivery day and also use different contracts for different supplies. This means the cost of the gas delivered today is the weighted average cost of a contractual portfolio of gas prices stretching into the past—and this may bear no relationship at all to current wholesale prices.

However, even where companies appear to be increasing retail prices to domestic customers less than might be considered “justifiable” in the light of the wholesale price increase—*indeed even if they may claim quite honestly that their retail businesses are making a loss*, as a consequence—as was recently claimed by the Chief Executive of E.ON UK plc, (*Financial Times*, 2008d)—vertical integration of the kind described above may enable the company as a whole to profit from such a situation as we shall now demonstrate.

Vertical Integration in Action (1): An Example from Electricity

As we have seen, it appears to be the objective of all the companies supplying the domestic electricity market to be able to achieve 100% vertical integration with their generation operations: in other words if their domestic supply market is 25 TWh per year, they require (and indeed, have mostly achieved) upstream capacity capable of generating 25 TWh per year. Any excess of electricity generation over this level can be sold into the considerably more competitive industrial and wholesale markets where they have less market power.



Table 9

**PROFIT PERFORMANCE OF COMPLETELY VERTICALLY-INTEGRATED DOMESTIC
ELECTRICITY SUPPLIER c 2005**

<i>Generation Segment</i>		<i>Supply Segment</i>	
Electricity Generation Sales to Supply Business	24,544,320MWh	Electricity Supply Sales to Domestic Customers	24,544,320 MWh
	<i>Millions</i>		<i>Millions</i>
Revenues	£928.6	Revenues @ 75.36/MWh	£1,849.7
Fuel Cost	£539.5	Wholesale Costs	£928.6
Other Costs	£180.9	Transportation Cost	£493.0
Operating Profit	£208.2	Supply cost + profit	£428.1
Margin %	22.4	Supply cost	£400.4
		Total Costs	£1,822.0
		Operating Profit	£27.7
		Margin % =	1.5

Source: Drax Group plc Annual Report & Accounts 2005 (for generation segment data), Centrica plc, Annual Report & Accounts 2005 (for supply segment data).

Note: in 2005, the net electricity generation of the Drax Group (23.2 TWh) was broadly similar in magnitude to the electricity volume of Centrica's domestic supply business (25.4 TWh). In the circumstances we have not felt it necessary to make any proportional adjustments to the Drax-based data for revenues, costs and profits as these would be unlikely to make any material difference to the argument.

In this theoretical company (but where the figures are based on industry data) the supply segment purchases all its wholesale electricity from the Group's generation segment; visa-versa the generation segment sells all its output to the supply segment. We believe the profit margins are more or less typical for the industry at this time—22.4% for generation and 1.5% for Supply. Total Profit is £208.2 million + £27.7 million = £235.9 million with an overall margin on external revenue (that of the supply segment) of 12.8%.

We now assume a 30% rise in all wholesale prices. The charge for electricity by the generation segment to the supply segment increases to £1,207.2 million while, at the same time, the fuel costs of the generating segment, rise from £539 million to £701.4 million (we assume the other costs remain as before). Since the wholesale electricity cost charged to the supply segment only originally accounted for 50.2% of the supply segment revenues (£926/£1849.7), the maximum "justifiable" increase in the domestic retail price would be $30\% \times 0.502 = 15.06\%$.⁴¹²

However, let us also assume that, in the interests of public relations the company decides that its supply business will raise retail prices by only 12%. Then the profit performance is as shown in Table 10.

Table 10

**PROFIT PERFORMANCE OF COMPLETELY VERTICALLY-INTEGRATED DOMESTIC
ELECTRICITY SUPPLIER c 2005 AFTER 30% INCREASE IN WHOLESALE PRICES**

<i>Generation Segment</i>		<i>Supply Segment</i>	
Electricity Sales	24,544,320 MWH	Electricity Sales	24,544,320 MWH
	<i>Millions</i>		<i>Millions</i>
Revenues	£1,207.2	Revenues	£2,071.7
Fuel Cost	£701.4	Wholesale Costs	£1,207.2
Other costs	£180.9	Transportation Cost	£493.0
Operating Profit	£324.9	Supply Cost + profit	£371.5
Margin %	26.9	Supply Cost	£400.4
		Total Costs	£2,100.5
		Operating Loss	-£28.9
		Margin % =	-1.4

Since the prices (and revenue) of the supply segment have only increased by 12% while the cost of the wholesale electricity charged to the supply segment has increased by 30% (and assuming the other costs remain as before), the supply business records a loss of £28.9 million while the supply segment margin has fallen from 1.5% to -1.4%. However the total operating profit of the vertically-integrated operation has actually increased from £235.9 million to £296.1 million (£324.9-£28.9) while the total margin on external sales has risen from 12.8% to 14.3% (£296.1 x 100/£2,071.7).

⁴¹² The question of what is a "justifiable" pass-through of wholesale to retail price is discussed further in Section 5 of our evidence.



It must be emphasised that this example is an “ideal type” used for explanatory purposes; it does not represent a real company. Nevertheless it demonstrates very clearly how vertically integrated companies can benefit from the same rising wholesale prices which they blame for “loss making” in their downstream business.

Other things being equal, we would expect a company which has many levels of vertical integration to have more opportunities to follow this strategy than those which have fewer or no such vertical structure. Certainly the evidence that non-integrated energy companies are at a disadvantage in this respect is illustrated by Drax Group whose operations comprise one very large coal-fired power station which is totally exposed to the vagaries of the wholesale markets and in 2007 was caught by falling electricity prices and rising coal costs such that its operating profit (before exceptionals and re-measurements fell by 16% (from £548 million to £462 million), (Drax Group, *Preliminary Results*, 2007) while the operating profits of the three other companies which have published 2007 results (Centrica, E.ON UK and RWE npower) all saw their profits increase.

Vertical Integration in Action (2): Centrica plc

Given the number of vertical integration tiers in Centrica’s portfolio of UK energy businesses (see Figure 3), we should expect it to have the more possibilities for successfully controlling its profit risk. This expectation is fulfilled.

Table 11

CENTRICA’S OPERATING PROFITS FROM UK ENERGY OPERATIONS, BY SEGMENT, 2001–07

<i>Financial Years ending December £million</i>	<i>Centrica’s Profits from its UK Energy Businesses (Operating Profit before Exceptional Items and Remeasurements)</i>						<i>Total UK Energy Operating Profit £ million</i>	<i>% Increase in Operating Profit</i>
	<i>British Gas Residential Gas & Electricity</i>	<i>British Gas Homes Services</i>	<i>British Gas Business</i>	<i>Wholesaling & Trading</i>	<i>Gas Production</i>	<i>Gas Storage</i>		
2001	-46	n/a	44		573	n/a	571	
2002	218	61	65	72	447	1	864	51.3
2003	136	84	51	81	480	40	872	0.9
2004	249	95	64	-61	573	69	989	13.4
2005	90	111	77	-117	1,020	154	1,335	35.0
2006	95	102	87	-178	864	228	1,198	-10.3
2007	571	151	120	234	429	240	1,745	45.7
Total Profit 2001–07	1,313	604	508		4,417	732	7,574	

Source: Centrica plc, *Annual Reports & Accounts*

How Centrica’s portfolio works for the company is illustrated in Table 11, which shows the locus of profits moving between its different energy businesses. In 2005, for example, a year of high gas prices, Centrica made very large profits from its gas production and relatively little from its domestic customers. In 2007, in contrast, upstream profits were much lower and these were exceeded by a 500% increase in profits from domestic customers as falling wholesale prices were not passed on to consumers. In between, 2006 might appear to be an exception, a year in which the upward surge in profits faltered. However, in 2006 Centrica reduced its gas production by 37% due to “management decisions to carry out remedial work on South Morecambe’s cooler units during an extended summer maintenance period and our decisions to switch off the field in response to low intraday gas prices especially in the fourth quarter of the year” (Centrica Annual Report & Accounts 2006, p 15). If production had been maintained at 2005 levels profits could have been as much as £1,370 million. In addition Centrica has clearly benefited by adding an increasingly important “midstream” segment to its business—gas storage. Remarkably, profits from this essentially monopolistic segment (see our previous remarks) actually made twice as much money for Centrica in 2007 than the company’s energy sales to businesses.

Nevertheless, although Centrica has *more vertical integration tiers* than the other five domestic energy suppliers, we have also noted that *extent of vertical integration between those tiers* is less than the others (See Tables 7 and 8). Indeed, although it is the only company with a substantial gas production tier, in 2007 its own gas supplies only provided 42% of the volumes required by its domestic customers while its own generation volumes, having increased substantially during the past few years, still only covered 86% of its domestic customers demand. This suggests that the company may have more to gain by increasing its final energy prices and preserving its domestic segment margins than other companies which are better positioned to take advantage of the kind of scenario illustrated in Tables 9 and 10. On the other hand, Centrica also emerges as more of an upstream company than a gas and electricity supply company: 68% of its accumulated profits between 2001 and 2007 came from its upstream and midstream operations.



It has already been noted that OFGEM and BERR believe that in spite of the development of oligopoly the gas and electricity industry which serves domestic customers remains highly competitive because there is evidence of considerable customer switching between the six suppliers.

In fact, other things being equal, the UK domestic fuel market *ought to be* highly competitive: because although there are no substitutes for the products sold by the domestic fuel supply *industry* as a whole and therefore we would expect the *industry's* price elasticity of demand to be very low, this is not the case for each *individual supplier*. Here we see the exact opposite: there are perfect substitutes for each individual company's product and we should therefore expect the price elasticity of demand for each company's products to be very high indeed.

In other words—and this is the narrative which OFGEM and BERR would have us believe—each company will raise its gas and electricity prices above those of its competitors at its peril: if it does so it will rapidly lose its customers (because a perfect substitute is available), sales volumes will fall as will revenue and profits.

Unfortunately we only have data from two companies, Centrica and E.ON UK, which are sufficiently detailed and disaggregated to examine the validity of the OFGEM/BERR narrative. Table 12 provides data on Centrica's domestic gas market revenues, sales volumes, customers and prices and the annual changes in these variables between 2001 and 2007.

At first, the data look broadly consistent with the OFGEM/BERR narrative. In 2002 the gas price increases by 7.6% over the year compared with the average for 2001, the company loses 4.5% of its gas customers, sales volumes fall by 12.3% and revenues by 5.6%. The responsiveness of demand for the company's gas to the change in price (% change in sales volume divided by % change in price) is moderately elastic: a 1% increase in price results in a 1.63% fall in sales volume. However, the following year (2003) the pattern begins to change: an average annual price increase of 1% only results in a 0.8% fall in sales. Thereafter, until 2007, the pattern is completely inconsistent with the OFGEM/BERR narrative: the price elasticity of demand falls well below unity and as low as 0.26 in 2004. In that year the price increases by 11.8%, the company loses 6.5% of its customers; however sales volume only fall by 3% and revenue actually increases by 11.4%. The same pattern broadly continues for the succeeding two years. Indeed, in 2006, Centrica's gas price increases by a massive 28.6%, but customers and volumes only fall by 7.8 and 7.9% while revenues increase by a substantial 15.2%. Only in 2007 does the pattern revert to the Ofgem/BERR narrative: a very small annual increase in price (part of which is actually a price reduction) is accompanied by a 2.4% fall in customers while both volumes and revenues fall by 11.1%. The only problem with this account is that this was the year in which the company made a record profit of £571 million from its domestic gas and electricity business.

Table 12

CENTRICA, DOMESTIC GAS MARKET DATA AND PRICE ELASTICITY, 2001–07

	2001	2002	2003	2004	2005	2006	2007
Revenue from domestic sales £m	4,029	3,805	3,742	4,170	4,196	4,832	4,296
Domestic gas sales TWh	260.6	228.4	226.6	219.7	194.8	179.3	159.4
Domestic gas customers (000s)	13,451	12,839	12,590	11,771	11,131	10,263	10,018
Weighted average domestic gas price p/therm	43.80	47.12	47.57	53.16	61.16	78.66	79.26
Annual change in domestic gas revenue %		-5.6	-1.7	11.4	0.6	15.2	-11.1
Annual change in domestic gas sales (TWh) %		-12.3	-0.8	-3.0	-11.4	-7.9	-11.1
change in number of domestic gas customers (000s)		-612.0	-249.0	-819.0	-640.0	-868.0	-245.0
Annual change in domestic gas customers %		-4.5	-1.9	-6.5	-5.4	-7.8	-2.4
Annual change in domestic gas price %		7.6	1.0	11.8	15.0	28.6	0.8
Price Elasticity of Domestic Gas		1.63	0.85	0.26	0.76	0.28	14.56

Sources: Centrica plc, *Annual Reports and Accounts 2001–06*, Centrica plc *Preliminary Annual Accounts 2007*

Notes: The price changes shown are simply changes in the average annual price disclosed by Centrica: in reality price changes did not occur at year-end but took place (sometimes more than once) within the calendar year. The price elasticity of demand is given as: $-(\Delta q/q \times 100) \div (\Delta p/p \times 100)$ where p is the



average annual domestic price, q the quantity of gas sold and Δ the change in price and quantity; the minus sign is added in the formula because it is conventionally assumed elasticity should have a positive value whereas it is also conventionally assumed that an increase in price is associated with a decrease in quantity sold (a downward sloping demand curve).

Indeed when we compare the pattern of change in Centrica's total customer numbers (gas and electricity) with the change in operating profit from domestic sales throughout the whole period 2001–07 we observe no particular relationship whatsoever (Table 13).

For example, in 2002 Centrica lost 1% of its customers but its operating profit increased by 1,047%; in 2003 it gained 0.8% more customers but its operating profit fell by 37.6%; and in 2004, when the company registered its second biggest drop in customers (5.6%) its profits increased by 83.1%. In other words, as a profitability “driver” customer numbers (and hence the significance of “switching”) appear to have been almost totally irrelevant for this company.

Table 13

CENTRICA: CHANGES IN DOMESTIC CUSTOMER NUMBERS AND DOMESTIC ENERGY SUPPLY OPERATING PROFIT, 2001–07

	2001	2002	2003	2004	2005	2006	2007
Domestic gas customers (000s)	13,451	12,839	12,590	11,771	11,131	10,263	10,018
Domestic electricity customers (000s)	5,374	5,795	6,189	5,950	5,920	5,759	6,019
Total domestic customers	18,825	18,634	18,779	17,721	17,051	16,022	16,037
Annual change in total customers (000s)		-191	145	-1,058	-670	-1,029	15
Annual change in total domestic customers %		-1.0	0.8	-5.6	-3.8	-6.0	0.1
Domestic energy operating profit £m	19.0	218	136	249	90	95.0	571.0
Annual change in domestic operating profit %		1,047.4	-37.6	83.1	-63.9	5.6	501.1

Source: Centrica plc, *Annual Reports & Accounts*

Although the disclosure of E.ON UK's market data is considerably less detailed than that of Centrica, the same pattern of extremely low price elasticity of demand is also clearly apparent (Table 14).

Table 14

E.ON UK: DOMESTIC GAS AND ELECTRICITY MARKET DATA AND PRICE ELASTICITY, 2003–06

	2003	2004	2005	2006
Domestic gas sales TWh	51.2	51.5	54.1	52.4
Domestic electricity sales TWh	30.0	29.2	28.4	26.5
Domestic gas customers (000s)	2,527	2,673	2,656	2,649
domestic electricity customers (000s)	5,397	5,380	5,148	4,956
Annual change in domestic gas sales (TWh) %		0.6	5.0	-3.1
Annual change in domestic electricity sales (TWh) %		-2.7	-2.7	-6.7
Annual change in gas customers %		5.8	-0.6	-0.3
annual change in electricity customers %		-0.3	-4.3	-3.7
Annual change in domestic gas price %		18.5	11.9	47.0
Annual change in domestic electricity price %		16.4	7.2	30.0
Price elasticity of demand (gas)		-0.03	-0.42	0.07
Price elasticity of demand (electricity)		0.16	0.38	0.22

Sources: E.ON UK plc, *Annual Report & Accounts*, E.ON AG. *Strategy & Key Figures*, various years.

Note: Where, as in this case, there are two years where the elasticity value is negative this indicates a situation where a price increase is associated with an increase in the quantity sold. For 2003, only the combined sales volumes for Domestic and SME customers are disclosed by the company. We have assumed that domestic sales volumes would be the same proportion of the combined (Domestic + SME) total as in 2004.

In 2004 a substantial increase in the company's gas price (18.5%) is associated with an increase in both customers and sales volumes, while in 2005 another gas price increase during the year (11.9%) results in only a very small fall in customers but quite a large increase in sales (5%). And in 2006, huge increases in both gas and electricity prices are accompanied by proportionately much smaller falls in volumes sold. Throughout the whole period, the responsiveness of demand to price increases is highly inelastic.



The answer to this apparent conundrum of very low price elasticity of demand in an industry where the “competitors” are each selling a perfect substitute is fairly straightforward. Firstly, during the period in question, all suppliers have been increasing their prices making it difficult for consumers to understand (using OFGEM’s favourite metaphor) precisely “where to shop”. In any case, when OFGEM urges domestic consumers to “shop around” for cheaper suppliers, (as though buying domestic fuel supplies is like purchasing the family’s weekly vegetable requirements) it is using a totally inappropriate metaphor given that the transaction costs of time, trouble and legitimate fear of billing problems mean that customers are unlikely to “switch” more than once per year at most. Therefore, when a consumer commits to a particular supplier he/she is locking himself/herself into a an indeterminate price: the customer has no knowledge whether the price to which he/she has committed will remain constant or whether it will remain the best bargain. The position is not much better if the customer chooses to accept a fixed price contract where, again, the customer is having to gamble on whether the contract will remain the best one for the foreseeable future. Furthermore, to complicate matters for the consumer the supply companies are now beginning to offer additional non-energy price inducements (typical of oligopolistic “competition”): for example EDF Energy now offers its customers free “Nectar Points” for use at Sainsbury’s. It is therefore hardly surprising that consumers are confused and anxious when considering whether or not to switch supplier and that consequently price changes have only a limited impact on the volume of switching and sales volumes. Indeed, according to a recent study by Davies *et al.*, so confused were electricity consumers in 2000 that almost a third of switching consumers moved to a supplier that actually charged more than the incumbent; and by 2005 matters had barely improved: in that year only an eighth of consumers who switched to get lower prices chose the supplier who gave them the best deal (Davies *et al* 2007)

4. WHOLESALE GAS MARKET AND PRICES TO CONSUMERS

Turning now to wholesale markets, while we restrict our attention to wholesale gas markets these are of course also relevant to the electricity market via the use of gas in the UK’s gas-fired power stations.

A Home-Grown Problem

An oft-repeated contention of Ofgem and BERR is that the pricing of gas on the UK’s wholesale markets is deleteriously affected by the lack of liberalisation in continental Europe, in particular via the oil-indexed contracts which have been prevalent in the contracting for imported gas on the continent. A first point which may be made with respect to this contention is that there is a considerable body of research evidence that gas prices trend upwards with oil prices in liberalised markets without any linkage to “unliberalised” ones (Barcella, 1999; Serletis & Herbert, 1999; Asche *et al.*, 2006; Panagiotidis & Rutledge, 2007). These findings confirm the intuitive conclusion that gas prices are unlikely to spend long periods lagging behind movements in oil prices—*ceteris paribus*, producers are likely aspire to achieving prices in a similar range on a per joule basis and are not therefore likely to sell their gas at a discount to oil for any length of time.

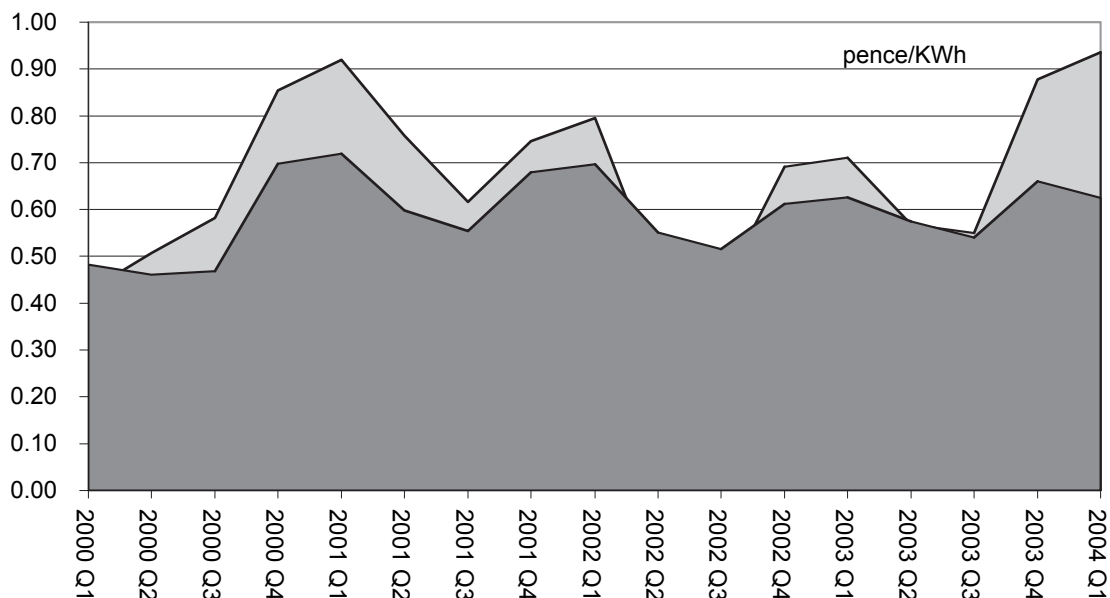
These points mean that in order to explain the volatility and high levels of UK gas prices we have to look to more home-grown causes. Our view, explored at length by one of us in *Gas Prices in the UK* (Wright 2006), is that the behaviour of the UK wholesale gas prices is logically linked to the liberalisation of the UK market, which has at times delivered prices in excess of both the oil equivalent price and the price of gas on continental markets. Why this is the case has four basic ingredients: (a) the gas industry is frequently afflicted by physical disruptions in supply caused by breakdowns and other random events (b) in a liberalised market these everyday disruptions have immediate and dramatic reflection in wholesale market prices, not just because of the consequent shortfall in aggregate production, but also because market participants take positions to profit from the difficulties of the supplier or suppliers most affected by the disruption (c) because another aspect of gas market liberalisation has linked an increasing proportion of UK wholesale gas deliveries to these volatile short-term markets—contracts are increasingly “gas-indexed”—the prices signalled by the relatively small volumes traded in short-term markets therefore price much larger volumes of gas being sold into the market (d) because of the potential cost to individual suppliers of physical disruptions, particularly if they occur during the winter or just before the winter as stocks are being built up, futures prices can soar to dramatically high levels.

This last point, the cost of insuring prices in a liberalised gas market, is indicated in Figure 4. The figure is stacked with the blue-shaded area representing the “beach” or “upstream price” (average unit price received by producers of gas), while the red-shaded area shows the premium over the beach prices registered by the most commonly used index price for UK gas deliveries futures market—the Month-ahead price.



Figure 4

THE IMPACT OF FUTURES MARKET COSTS ON THE PRICE OF GAS



Source: adapted from Wright (2006, Figure 6.2, p 140)

While a small part of the difference between these two price series may be explained by entry capacity charges (the Month-ahead price is for delivery to the UK's notional National Balancing Point—NBP—and therefore includes these charges for transportation), most of the difference reflects the additional costs imposed on consumers by liberalised gas wholesale markets. Traders buy and sell the risk of delivering the right amount of gas at the right time and this is reflected in a risk premium which increases the price. As well as providing traders with a source of profit, this premium also clearly escalates in winter months as both the risks of securing supply, and the costs of failing to do so, increase.

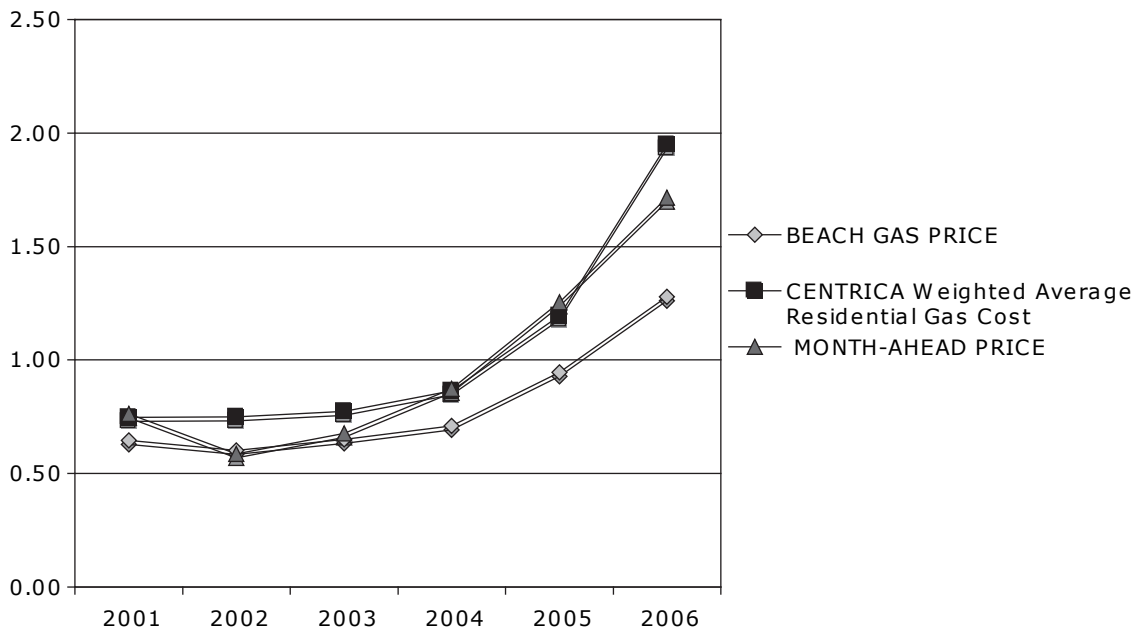
Another conclusion which may be drawn from Figure 4 is that at least until the first quarter of 2004, upstream producers were not responsible for driving the trend in UK gas prices in an upward direction—this was a function of the wholesale markets.

The fact that Figure 4 does not extend beyond the first quarter of 2004 is because BERR ceased to provide a quarterly beach/upstream price figure after that time. Subsequently, there is only an annual beach price to work with. Using this in Figure 5 it is compared with (a) the Month-ahead futures price and (b) the weighted average cost which Centrica states that it pays for gas to supply its domestic customers. While during the period beyond the beginning of 2004, the upstream price received by producers was clearly now playing a role in pushing UK gas prices upwards, the behaviour of the futures price was adding to this effect to a steadily increasing extent as the risk premium commanded by wholesale markets increased. Moreover, Centrica's gas costs, which comprise a portfolio of contracts with different time profiles, are shown to be similar to and sometimes exceeding the Month-ahead price.



Figure 5

WHOLESALE PRICES TO SELLERS AND BUYERS COMPARED



Sources: BERR, *Quarterly Energy Prices*, Table 3.2.1; Centrica plc, *Annual Reports & Accounts*; Heren Energy

5. RELATIONSHIP BETWEEN WHOLESALE AND RETAIL GAS PRICES

If the behaviour of wholesale markets already spells difficulties for consumers, these are compounded by the way the relationship between wholesale and retail prices may be manipulated.

The relationship between wholesale market prices and retail prices is frequently discussed under two misconceptions. Firstly, it is suggested that if wholesale prices rise by x%, then it is quite reasonable to expect retail prices to rise by the same percentage. Such an argument is implicit in a graph which appeared on the front page of the *Observer Business* section on 24 February 2008 and has also been peddled by OFGEM and recycled by the *Financial Times*.⁴¹³ In fact this supposition is entirely fallacious. Because wholesale gas prices, for example, only constitute around half of the final price of gas to domestic consumers, a wholesale price rise of say, 20%, could only be used to try and justify a 10% increase in retail prices. We say “try and justify” because if the gas and electricity retail markets were really competitive, cost pass-throughs to consumers could not be automatic. Secondly, as noted above, wholesale prices today, this week or this month do not reflect the cost of gas delivered today, this week or this month. Suppliers contract for their gas years and months ahead of the gas delivery day and also use different contracts for different supplies. This means the cost of the gas delivered today is the weighted average cost of a contractual portfolio of gas prices stretching into the past—and this may bear no relationship at all to current wholesale prices.

In order to be able to understand the relationship between wholesale prices and the final prices paid by domestic consumers knowledge of this weighted average cost of gas or electricity supplies is essential. Fortunately, one company (and only one of the Big Six) does disclose these costs and other data which makes it possible to decompose the domestic prices of gas and electricity into its three main cost components: the cost of the gas itself; the cost of transporting it to consumers; and the cost of marketing and billing for it (the so-called “supply cost”) *which also includes the company’s profit margin*.

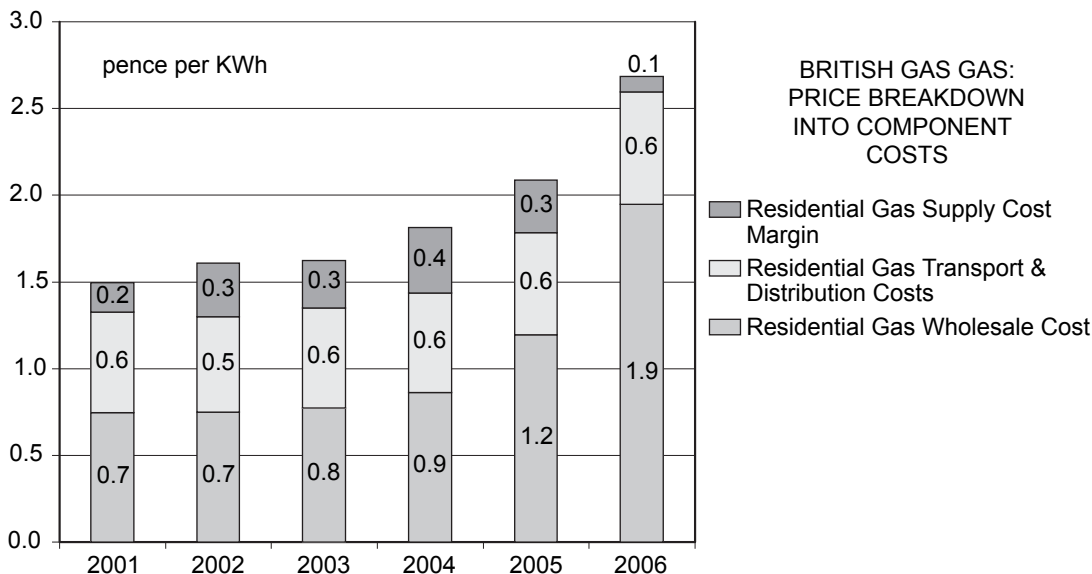
From Figure 6 it can first of all be seen that the cost of transporting gas to households has been very stable since 2001, coming in at 0.6pence/KWh in every year apart from 2002. On the other hand, it is clearly the case that changes in the wholesale cost of Centrica’s gas have been a major driver of increases in prices. However, this is not the whole story: in both 2002 and 2004 it can be seen that changes in the supply cost (including profit margin) have also played a role. Moreover, such large increases were not caused by dramatic changes in the actual costs of marketing and billing, they were caused by increases in downstream profit margins: as price control were lifted in 2002 the profit margin on domestic energy sales was raised by Centrica from 0.4% to 4.2% and then in 2004 it was raised from 2.6% to 4.1% and according to the company’s preliminary 2007 results its profit margin on domestic energy supply has now risen to 8.8%.

⁴¹³ see OFGEM’s “Factsheet” No 66 (8/11/06), “Household Bills Explained”, later uncritically recycled by the *Financial Times* on 5 December 2006. Warwick University academics Waterson, Giulietti and Grossi also appear to be oblivious to this point in an article for Power UK (January 2008, p 60).



Figure 6

CENTRICA (BRITISH GAS) GAS: BREAK-DOWN INTO COMPONENT COSTS

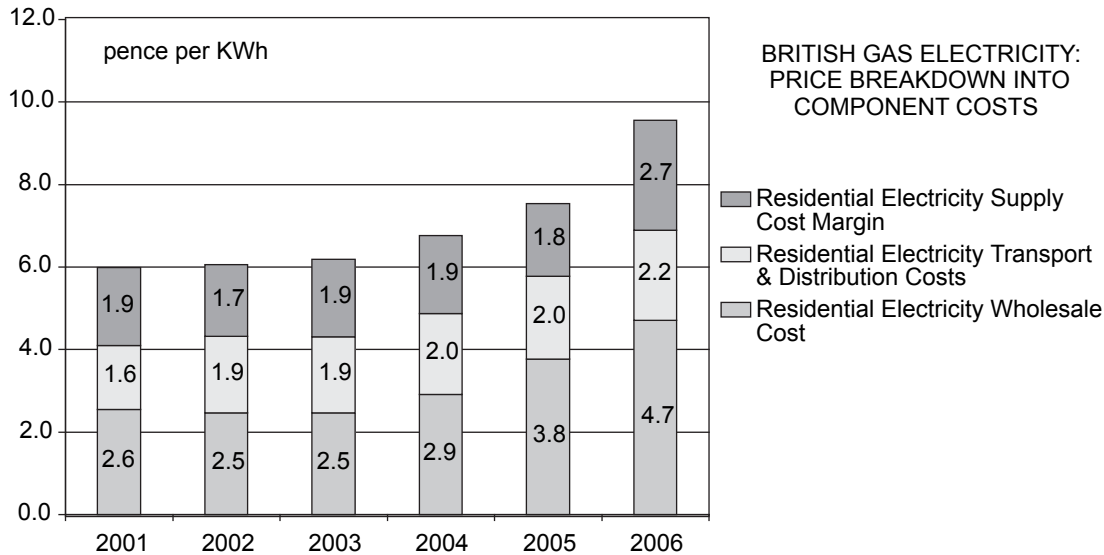


Source: Centrica plc, Annual Reports & Accounts

After 2004, in 2005 and 2006 (the data are not yet available to construct a 2007 breakdown) the gas supply margin was squeezed as increases in wholesale prices were not fully passed on to domestic consumers, particularly in 2006. However, this should not be seen as either an indicator of competitive pressure or a friendly gesture by Centrica to its customers. From Table 10 it can be seen that over these two years Centrica made £1,884 million in profits from its gas production arm, some 74% of its overall profit. Moreover, as Table 10 also shows that Centrica managed to maintain the profits from its domestic energy business roughly constant in between 2005 and 2006, a feat achieved at the expense of its electricity consumers. From Figure 7 it can be seen that the electricity supply cost margin suddenly leapt upwards in 2006, from 1.8 pence/KWh to 2.6 pence/KWh.

Figure 7

CENTRICA (BRITISH GAS) ELECTRICITY: BREAK-DOWN INTO COMPONENT COSTS



Source: Centrica plc, Annual Reports & Accounts



6. REGULATORY OVERSIGHT

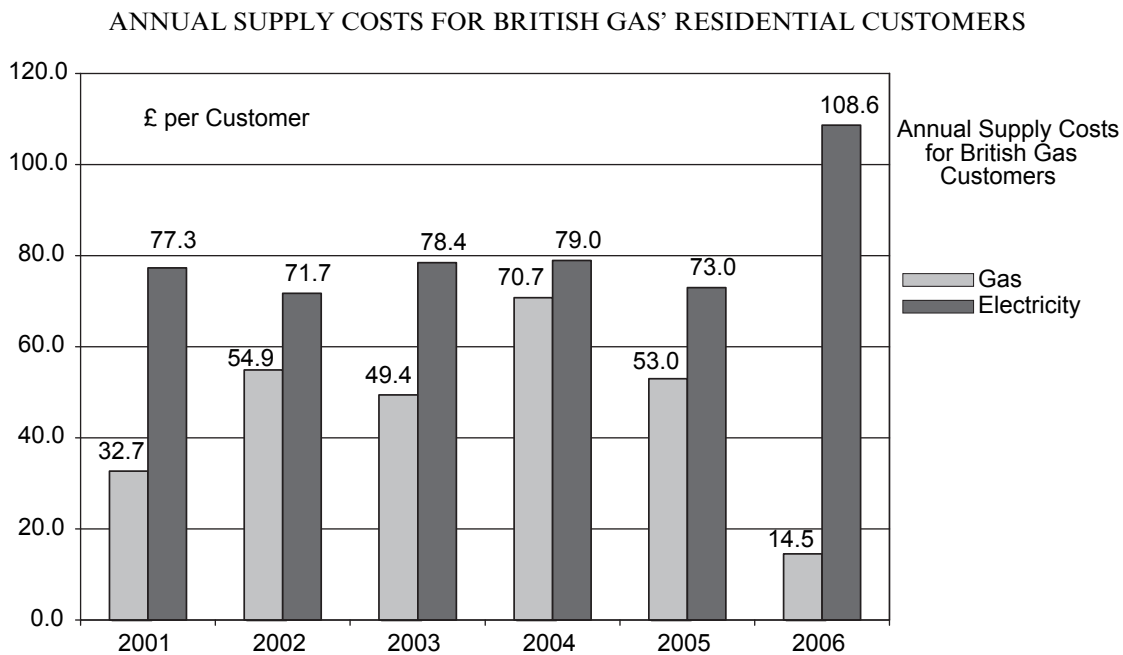
This last point also highlights an issue of regulatory oversight which Figure 8 brings into sharper relief.

While Figures 6 and 7 expressed supply cost margins for domestic gas and electricity in terms of pence/KWh supplied, Figure 8 converts these costs to an annual bill based on the average gas and electricity consumption levels of Centrica's domestic customers. This shows that the annual supply cost (marketing cost, billing cost and profit margin) of electricity had been relatively stable compared with gas supply costs between 2001 and 2006, fluctuating between about £71 and £79. Then suddenly, just as gas supply margins were facing a severe squeeze, electricity supply costs leapt to an average of £108.60 per customer.

Moreover, in this context it should also be noted that in 2001, Ofgem estimated the annual supply cost per electricity customer (excluding profit) as just £40 and £20 per gas customer (Ofgem, 2001b). Since 2001 companies have had to invest in new technology to deal with switching and other supply business demands; this may have increased the supply cost; on the other hand, the growth of dual-fuel customer billing will have worked in the opposite direction. On balance it seems unlikely that Ofgem's 2001 estimate of supply cost would have changed very much.

In other words not only do Centrica's levels of electricity and supply costs per customer seem substantially out of line with Ofgem's own estimates, but the dramatic hike in the electricity supply cost during 2006 is a levy on electricity customers constituting prima facie evidence of price discrimination against domestic electricity consumers.

Figure 8



Source: Centrica plc, *Annual Reports & Accounts*

7. UK AND EUROPEAN MARKETS: MYTH AND REALITY

To the great irritation of our European Union neighbours, who have chosen to manage the risks associated with the supply of gas and electricity to their citizens differently from the UK, Ofgem and BERR have been wont to hide behind a "blame it on Europe" smokescreen. They have also trained a small army of journalists to parrot this line of argument eg "The problem is not that suppliers are rigging their tariffs, but that wholesale prices are soaring and consumers here are forced to pay through the nose for gas imported from the Continent, where the market is opaque and uncompetitive". (*Observer*, 2008). Unfortunately, just like the view that the extent of "switching" reflects the degree of competitiveness in the market, this argument is also entirely fallacious. It is based on the non-sequitur that if the rest of Europe had more liberalised gas and electricity markets the UK's problems would evaporate, particularly because greater liberalisation would lead to the disappearance of oil-indexed contracts in the rest of Europe and therefore of the contaminating, Interconnector-delivered link with oil markets. In fact, it is highly unlikely that greater liberalisation of European markets would (a) lead to a reduction in the volume of gas covered by oil-indexed contracts many of which have only recently been signed with major producer nations and are not due to expire until the mid 2030s (Energy Charter Secretariat, 2007), or (b) even if it did, that the result would be to sever the link between oil and gas prices—as we have already noted, there is a body of research which suggests otherwise. Moreover, why would liberalisation not have similar effects in continental Europe to those which it had in the UK in 2005/6?

A separate issue affecting the relationship between the UK and continental gas markets, and which has nothing at all to do with perceived continental conspiracies to make the UK consumer suffer, is that the UK has painted itself into a corner by not building additional storage capacity commensurate with the country becoming a net importer of gas (see ILEX, 2005). The consequences of this shortcoming are starkly evident: during summer months the UK is exporting relatively cheap gas to the continent as other EU countries seek to establish winter security for their consumers, but then is being forced to buy it back at a premium when the country needs to import during the winter. If the UK had built sufficient storage it would not be exposed in this way: summer gas could go straight into storage in the UK, obviating the need to import during periods of potentially premium prices.

8. CONCLUSIONS

Our first conclusion responds to the Committee's questions about the competitiveness of the UK's retail energy markets. We believe that our evidence demonstrates two main points: (a) that the market structure which has evolved is anti-competitive and (b) that any amount of switching by retail consumers has and will fail to change this. In particular, litmus tests for the anti-competitiveness of the market structure are not only concerned with market concentration. As we have seen, the companies involved in the market have arranged their affairs so that they can sustain high and rising profits *whatever the level of their final prices to households and small businesses*. Corroboration of this and of the ineffectiveness of switching is that companies can be observed to make more money with lesser number of customers—hardly a punishment for causing their customers to switch.

Our second conclusion is that UK households are paying higher gas and electricity prices as a result of the increased uncertainty which liberalised wholesale gas markets entail and reflect, imposing an insurance premium on consumers which is highly sensitive to the actual and perceived risks of shortfalls in supply over winter months. Moreover, policy has contributed to this problem by failing to ensure that sufficient gas storage be built in a timely fashion.

Our third conclusion is that, apart from the anti-competitive *structure* of the UK's domestic gas and electricity markets, there is also evidence of actual anti-competitive *behaviour*. There is evidence of both gas prices to households being raised by more than might be justified by increasing wholesale prices and of electricity consumers being discriminated against. While this evidence is from one company, this is only because there is only one company which discloses sufficient information to consider these issues. All companies have the ability to vary the mark-up on wholesale, transportation and supply costs, according to market conditions and specifically, to discriminate between gas and electricity customers in order to protect the overall margin; only lack of company-sourced data prevents us from ascertaining how frequently other supply companies exercise this option.

Our final conclusion is that it is the domestic consumer who is most vulnerable to the deployments of companies' market power which we have identified—the domestic consumer is at the end of the chain and thereby the ultimate recipient of price risk as it is passed down the chain. However, this does not also mean that we see a remedy in the break up of the portfolios which companies have built up in order to manage their risks. Indeed such a break-up could have serious consequences for prices if it increased uncertainty and undermined the capacity of supply companies to contract for eg the large volumes of imported gas which the country will increasingly require. Instead we would propose the re-introduction of price control regulation as the only way of ensuring that households and small businesses are not exploited. Moreover, it may well be, bearing in mind the large investments in electricity generation capacity which companies are being supplicated to undertake, that rate of return regulation would be a better option than the previously favoured price-cap form of price control regulation.

The urgency of adopting some such measure to protect not just the fuel-poor but also the mass of low-to-middle income domestic energy consumers at a time when they are being squeezed by other inflationary pressures (in particular higher mortgage and food costs) is underlined by the fact that there is growing evidence that the supply companies are now anticipating a surge in wholesale electricity prices over the next five years as a result of an expected rapid decline in the capacity margin of UK electricity generation. For example, in 2006 RWE AG stated that, as a result of the shut-down of around 7 GW of nuclear capacity and 8.2 GW of coal-fired capacity (as a result of the Large Combustion Plants Directive) “a sustained increase in wholesale prices” will commence around 2011 (RWE, 2006, p 116). In 2007 the company made the same prognostication (albeit more euphemistically), anticipating that “market fundamentals” in the UK would soon lead to “a sustained return of value to the generation sector”. (RWE, 2007). It should be added that research commissioned by BERR itself points in the same direction: According to the Energy White Paper of 2007:

“In most scenarios examined, we see some decline in the amount of capacity that is in excess of expected peak demand between now and the middle of the next decade. As a consequence, we would expect to see an increase in electricity prices . . .” (DTI, 2007, p132)

However, in spite of the urgent need to address the serious social and economic problem of rapidly rising domestic fuel bills by regulatory intervention, we do not underestimate the possibility that after the years rising profits which they have enjoyed since regulation was abolished, the big six companies will strongly oppose any move back towards price control regulation for domestic consumers.



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APPENDIX

COMPANY-SOURCED FINANCIAL AND OPERATING DATA

In constructing the tables containing company financial and operating data we have used the following sources:

Centrica plc: *Annual Report and Accounts*, 2001–2006, available:
<http://www.centrica.com/>

Centrica plc: *Preliminary Results for 2007*, available: <http://www.centrica.com/>

Drax Group plc, *Annual Report and Accounts*, 2005–2007, available:
<http://www.draxgroup.plc.uk/>

EDF Group, *Document de Base* 2004, and *Document de Reference* 2005–2006, available: <http://www.edf.fr/92053i/Home-fr/Meta-Plan/EDF-Group.html>

EDF Energy plc: *Annual Report and Accounts*, 2003–2006, available:
<http://www.companieshouse.gov.uk/>

E.ON UK plc, *Annual Report & Accounts*, 2003–2006, available:
<http://www.companieshouse.gov.uk/>

E.ON AG, *Annual Report & Accounts* 2003–2007, and *Strategy & Key Figures*, 2004–2006, available: <http://www.eon.com/>

E.ON AG, *Annual Report on Form 20-F*, 2003–2006, available:
<http://www.sec.gov/edgar.shtml>

RWE AG, *Annual Report and Accounts* 2003–2007 and *RWE Facts and Figures*, 2004–2007, available:
<http://www.rwe.com/generator.aspx/language=en/id=450/home.html>

Scottish Power Ltd, *Annual Report & Accounts* 2006–07, available:
<http://www.companieshouse.gov.uk/>

Scottish Power plc, *Annual Report & Accounts* 2003–04 to 2005–06, available as supplements to 20-F Reports at: <http://www.sec.gov/edgar.shtml>

SSE plc, *Annual Report & Accounts* 2004–05 to 2006–07, available:
<http://www.scottish-southern.co.uk/SSEInternet/>

The profit data presented in Tables, 2, 3 and 4 are for Operating Profit (profit before tax and interest payments), for UK-only energy related operations. The figures are as published at the date in question, ie we have not used the remeasured figures which are sometimes displayed where the company presents its prior-year results for comparative purposes.

As stated in the text, this data (and the operating data in other tables) have been aligned so that there is the maximum overlap between the different financial years used by the companies: data from those companies with financial years ending in March have been aligned with data from those whose financial year ended the preceding December. This applies in the cases of Scottish Power and SSE both of which have financial years ending March. Consequently financial and operating data from these two companies derived from (eg) their 2006–07 Annual Reports are placed under the column headed 2006.

The data were primarily obtained from the “segment information” notes to the accounts of five of the companies which publish consolidated accounts for their UK operations (Centrica, EDF Energy plc, E.ON UK plc, Scottish Power Ltd/plc and SSE plc). The exception is RWE npower where we have used the segment data of the German parent company RWE AG where the segment is for RWE npower’s operations and the data is for EBIT (with currency conversion from euro to sterling at the annual average rate stated by the company). EBIT is earnings before interest and taxation which means that the figure may also include some post-tax income from any associate companies or joint venture in which the parent owns less than 50%. We do not believe that the use of EBIT for RWE makes any material difference to the argument). In addition, since E.ON UK’s annual report for 2007 was not yet available, for E.ON UK’s 2007 operating profit figure we have used the EBIT figure for the company’s UK segment from E.ON AG’s 2007 Annual Report (which has been published). However, since our main argument is centred on the period 2003–06 any slight distortion arising from using EBIT for 2007 and Operating Profit for the years 2003–06 is minimal.

The choice of the year 2003 as the base line for our analysis is based on two factors (1) 2003 is the first full year after the UK domestic energy supply industry was fully de-regulated (in April 2002); (2) there were no significant acquisitions of other domestic energy supply businesses by the six companies after this date. However, both SSE and Centrica made acquisitions of generating capacity over this period and in 2004 E.ON acquired Midlands Electricity, a regulated distribution business.

Among the six companies, only Centrica discloses a detailed segment breakdown of its different business operations. However, EDF Energy, E.ON UK, Scottish Power and SSE provide separate segment data for their regulated and non-regulated operations. The RWE npower data obtained from RWE AG’s annual reports provides no further breakdown, however since we know that RWE npower has no regulated energy businesses, we have been able to include the company in both Table’s 2 and 4.



In 2005, UK companies were required to begin to use International Financial Reporting Standards (IFRS) in place of UK GAAP. This has had implications for the profit and loss account in so far as companies are now required by IAS 32 and IAS 39 to include their losses and gains on certain derivative contracts in their income statement by “marking to market” or some other method of assessing their fair value. (Derivatives which are for “own use” are exempted, however). The inclusion of these hugely volatile “paper” gains and losses is widely recognised as potentially distorting the underlying business performance of the company and the six companies whose operating profit we have used in Tables 2, 3 and 4 all provide sufficient information to either add-back or deduct the value of these volatile re-measurements.

28 March 2008
