Which?

Which? works for you

July 2013

Affordable Energy Campaign

THE BALANCE OF POWER

Wholesale costs and retail prices

Contents

Which?

Which? exists to make individuals as powerful as the organisations they have to deal with in their daily lives

Executive summary

In recent years the energy retail market has, rightly, received much attention. By comparison, the wholesale energy markets have been largely ignored by the Regulator and Government. This must change.

Wholesale costs account for 60% of consumers' bills. That's around £852 a year of an average bill. Rising energy costs are a top financial concern for consumers, with many people dipping into savings or even going into debt to pay these bills. Energy bills haven't always been so high. Since 2001 gas bills have risen by 137% and electricity bills by 66%, with households now paying an average of £1420 a year. Energy suppliers have largely blamed the increases on a rise in wholesale costs. But consumers don't believe these claims – 84% think that profits rather than wholesale prices are driving the increases. This is hardly surprising given that price increases have been regularly followed by profit announcements.

Consumers have been left to take it on faith that all is working well and serving their interests. This is not good enough. In this report we've explored issues that have for too long been left unscrutinised.

- Are the companies playing fair?
- Are all the wholesale energy markets up to the job?

And we've found little to give consumers confidence that the prices they pay are fair.

- The structures of the biggest companies raise serious questions of conflicts of interests
- Much price setting and trading is hidden away behind closed doors
- The volume of trading and the level of competition in the open wholesale markets are low

The six large energy suppliers that cover 98% of the domestic market, also account for 70% of total British electricity generation output. The different business arms do business with each other behind closed doors. The combination of the structure of these companies, the way they are managed and their sheer size raises serious questions. For example, if these companies can make more overall profit by increasing their wholesale energy prices – even if they lose retail customers and sell less energy as a result – what incentive is there for them to give customers the lowest possible prices? Between 2004 and 2008 there were 77 price changes and 87% of these were price increases. This begs the question, to what extent were these driven by companies looking to serve their shareholders, apparently unchallenged by their nominal rivals to offer the most competitive prices possible.

The wholesale energy markets sit alongside the large vertically-integrated companies and competition in the markets is meant to be the bedrock of fair prices for consumers. But it is difficult to have confidence in them.

- It is impossible to tell how much energy goes through these markets but publicly available estimates are low – with in the region of 10% of energy consumed being traded in these markets
- The level of competition in the electricity market is widely recognised as being low
- While the gas markets are widely considered to be much more competitive, there have been allegations of price manipulation that are currently being investigated by Ofgem, the Financial Conduct Authority and the European Commission
- Getting price information from the wholesale markets largely relies on a 'Libor-style' system open to abuse.

How these large vertically-integrated companies and wholesale markets function should be aligned with consumers' interests but there is little, if anything, to suggest that this is really the case. The lack of scrutiny of this vital element of our energy system must now be addressed. While Which? has concerns about elements of the Government and Ofgem's current energy reform agenda, steps are being taken in the retail market, on energy efficiency and to secure investment in new generation. This cannot be said about the wholesale market, which is a missing element in this package of reforms. Given the central role that these markets play in the rising cost of consumers' bills, the Government can no longer ignore this issue and must recognise that Ofgem's limited proposals to improve wholesale market liquidity do not go far enough.

Which? believes that the Government should commit to an independent review to determine the actions needed to drive open and intense competition in both the wholesale and retail energy markets – ensuring that prices are kept in check. The recommendations in this report – starting with ring-fencing the supply and generation businesses in large vertically-integrated companies to introduce more competition and transparency – are intended to be a contribution to this debate. This report presents a package of compelling proposals that all those keen to give competition in energy its best chance of success must now consider.

Our proposals:

Recommendation 1

Ring-fence supply businesses from generation businesses in vertically-integrated companies by requiring a distinct license holder for each business

Which? considers that a natural skewing of incentives exists within the current vertical integration arrangements – reducing the effectiveness of the market to the detriment of consumers. Evidence set out in this report suggests that structures that put supply and generation or production businesses under a single management and governance structure, may impede competition, and so increase the prices consumers pay.

Ring-fencing supply businesses and so increasing their separation from upstream businesses should counter the natural conflict of interests within these large vertically-integrated energy companies.

This is an approach that has already been taken with transmission and network companies to address the skewing of incentives. It is also in line with the spirit of the European 3rd Energy Package objective of unbundling of businesses throughout the energy value chain.

Ring-fencing the supply businesses from generation should provide the opportunity to unlock competition and improve transparency in the wholesale energy markets.

First, this should ensure that the interests of the supply business are better aligned with those of its customers by enabling supply businesses to seek out the best possible prices for their customers. Ultimately, this should help improve consumers' trust both in the price they pay and the underlying market. It should increase volumes of energy being traded on the open market, support a greater range of participants and their interest in the markets and the prices being offered. This in turn should improve the quality and quantity of price information that can be transferred into more robust price indices.

This proposal can be achieved by implementing the same type of licensing regime that currently exists for co-ownership of network and transmission businesses and energy generation and retail, whereby:

- The licence holder of a supply business cannot be a licence holder of a generation and production business.
- The licences would prohibit the sharing of information or governance.
- All contracts should be externally brokered.

As with network companies, co-ownership should still be

allowed and this in turn should still provide these companies with the high-level commercial hedge of owning businesses throughout the value chain. As with the ownership of network companies, a series of rules would be needed to sit around this structure to ensure that the ring-fencing is not over-ridden.

Recommendation 2
Improve the quantity and quality of wholesale price data

Better quality and quantities of publicly available wholesale market information is required. Until there is a greater degree of transparency underpinned with better quality information, it will not be possible to assess the level of competition in wholesale markets, evaluate the efficiency of retail prices and design the most effective interventions.

It is critical that the poor quality of information is addressed promptly. It is vital to give consumers confidence in the prices they are paying today. But better quality price information will also play a crucial role in ensuring consumers do not pay more than needed for low carbon investment subsidies with the introduction of Contracts for Difference which will be based on wholesale reference prices.

There is no single action that will instantly bring transparency and confidence where previously there was none, but we consider increasing the volumes available for trading to be a fundamental building block for this. Building on Recommendation 1, set out below is a three part Recommendation to 1) bring integrity and transparency to uncleared over the counter (OTC) trading; 2) increase volumes of exchange trading; and 3) to address liquidity issues further up the curve.

1) Formalise uncleared OTC trading

The majority of wholesale energy trading is uncleared OTC trading and this trading plays an important role in the market providing bespoke products and reducing the barrier to trading through lower collateral costs. Steps should be made to formalise and surface publicly the data from this trading activity. Through this, all the volumes and prices across the various OTC trading platforms would be made publicly available and could be used for market monitoring and to compile reliable price indices.

This could be achieved by requiring all participants in uncleared OTC gas and electricity trading to allow the OTC brokerages and platforms to publish anonymised details of all the transactions. The new EMIR European regulation might also be used to deliver this, though it would require the regulations to cover all wholesale energy trading and for ACER, the European super regulator, to make the volume and price information publicly available in a timely fashion.

Bringing greater transparency to the uncleared OTC market would provide data for on-going negotiations and, for example, for the compilation of price indices that all stakeholders can have confidence in. This again is consistent with the thrust of the European programmes which aim to improve the integrity of the wholesale energy markets.

2) Increase the volumes of trading across exchanges

A greater proportion of exchange-based trading is common to many other European countries. An increase in Britain would improve the quality of energy trading information as there are no questions of integrity with exchange-based trading. Equally, increased trading across exchanges should counter any concerns over difficult contract negotiations for the large vertically-integrated energy companies, which was originally a driver of vertical-integration.

This could be achieved through reforms to the license conditions of generators and suppliers.

3) Ofgem should work with exchange platforms to review the case for exchange based market markers to improve liquidity across the wholesale electricity market

Low liquidity has serious implications for energy prices today and in the future. It is a barrier to market access, and liquidity in the markets will be important to prevent price manipulation. Therefore, an important aspect of improving the quality of the data is to ensure that there is enough underlying trading to produce the most efficient prices.

There is no single reason why the wholesale electricity markets are not more liquid. A combination of interventions is required to tip the balance, and greater legal separation of suppliers and increasing levels of exchange trading should help. We recognise that further intervention may be required and Which? considers the formalised introduction of a market maker to merit serious consideration. This should not be an obligation on vertically-integrated energy companies as is currently proposed by Ofgem[1] but an arrangement between, for example, a bank and an exchange. Working with the exchanges and, if necessary, with the Financial Conduct Authority, Ofgem should review the case for a market maker within the platforms and determine where it is most important for the markets to be liquid and what steps would be required to introduce one.

Recommendation 3

Ofgem and government should review and develop quality control criteria for wholesale market price indices

Robust wholesale energy price information should underpin efficient wholesale markets, providing confidence in energy prices today and in the future. However, the wholesale price information currently available lacks integrity on three counts. First, there are low levels of liquidity in the electricity markets, leaving prices vulnerable to excessive movement from a small amount of trading and resulting in allegations of market manipulation. Second, there is a lack of formal and robust data gathering. Third, the volumes of gas and electricity actually traded openly are small, representing a small proportion of the volumes being consumed. Despite the weaknesses in this data, it is still used and will have a formal role in the Electricity Market Reform as the source of price references. This appears to have finally been recognised by Ofgem which has now asked for evidence as to whether price indices are 'fit for purpose'. Ofgem also cites the importance of robust day-ahead price indices, though the importance of price indices further out appears to have been neglected.[2]

Implementation of recommendations 1 and 2 will improve the quantity and quality of wholesale energy price data. Working from this, Ofgem and government should develop a set of minimum standards for wholesale price indices based on robust and accurate data to provide confidence that a minimum standard of robustness and representativeness is met.

Recommendation 4

Comprehensive and effective monitoring of the wholesale energy markets and of the relationship between wholesale costs and retail prices

There has been little effective monitoring by Ofgem of the wholesale energy markets, the impact of vertical integration and the relationship between wholesale costs and retail prices. The proposals set out here will improve the quality and quantity of information available. Ofgem should have access to this information and the power to use it to monitor market activity and intervene if it considers it necessary to do so.

Ofgem should also ensure that data is brought together from the different wholesale energy markets, both the exchanges and OTC trading, to enable greater independent scrutiny.

Building on this and Ofgem's recognition of a need to monitor the day-ahead markets,[3] Ofgem must introduce new, more comprehensive monitoring criteria to enable a robust assessment of the wholesale and supply markets. This should include:

- Generation: volumes generated; volumes sold internally and externally
- Wholesale energy trading: volumes traded on platforms; volumes and numbers of different power products traded; churn ratios and bid-offer spreads; volumes of financial versus physical products being traded
- Wholesale – retail link: analysis of the movement of standard domestic tariffs (gas and electricity) against wholesale market movements; analysis of wholesale prices, generation margin, number of domestic customers, volumes of energy sold via domestic retail market, margins from retail supply arm and group profits.

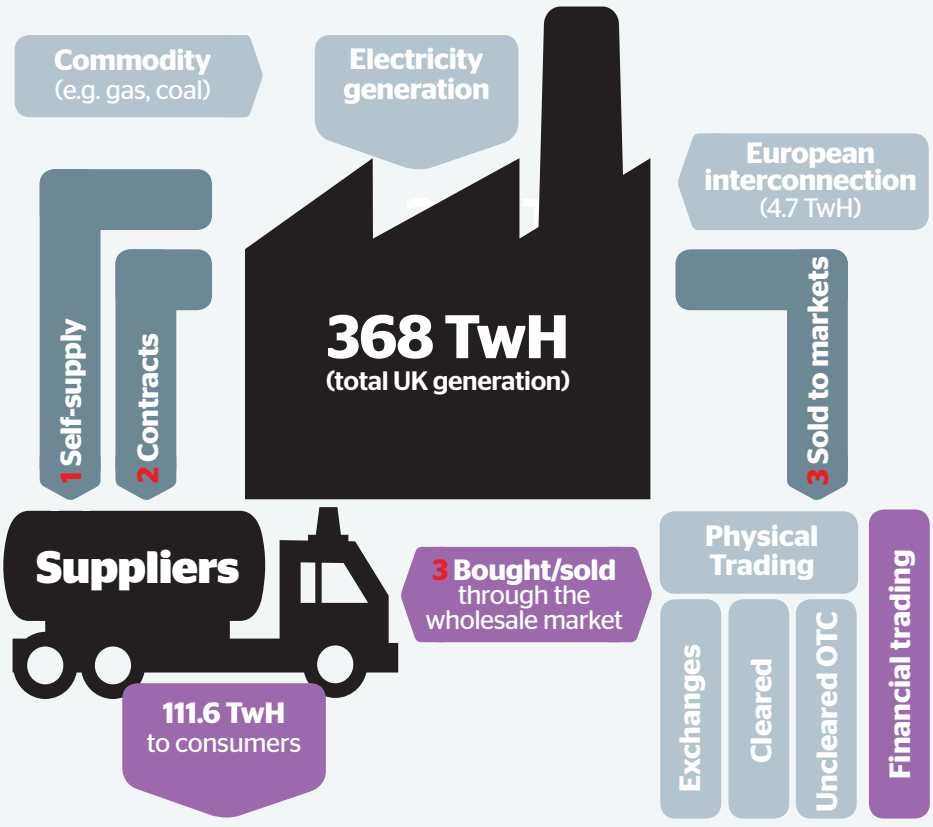
The energy consumers use and the prices they pay

1.1 From commodity to consumer

In 2011, around 30% of all the gas produced and electricity generated in the UK was used by domestic UK consumers – 293 terawatt hours (TWh) of gas and 111.6 TWh of electricity.[4] The vast majority of consumers buy this energy from their energy supplier via the energy retail market.

The energy suppliers can use a combination of routes to secure energy for their customers (Figure 1). First, they may generate the electricity or produce the gas themselves: large vertically-integrated companies may encompass both energy supply businesses and associated electricity generation or gas production businesses. Second, the supplier may have in place long term contracts and agreements with one or more electricity generators or gas producers. Finally, the supplier may obtain the energy directly from the wholesale market.

Figure 1: Electricity: from commodity to consumer



1-3 represent the different routes through which electricity can be sourced for a customer of a large vertically-integrated energy company.
1 The company self supplies – where by they sell it internally from their generation or production business to the supply business;
2 The company sells it to another supplier (large vertically-integrated or independent) or buys it from independent generators or another large vertically-integrated energy company;
3 The larger vertically-integrated company sells it to or buys it from the wholesale energy markets.

The flow of gas to customers is similar. Two points of note are that the degree of vertical integration in gas is less and it is estimated that nearly 50% of gas supplied goes through structured contracts; there is no equivalent figure available for electricity.

Data sources includes: Digest of United Kingdom Energy Statistics, July 2012

Regardless of which route or combination of routes the supplier uses to secure wholesale energy for its customers, the wholesale energy markets influence the price paid by suppliers (and so customers). The price information derived from the wholesale energy markets is limited and Which? thinks the process for gathering it is vulnerable to manipulation, but it is often used to inform or negotiate other prices. That includes setting transfer prices, when energy is bought and sold within vertically-integrated companies[5], or negotiating and indexing structured contracts and power purchase agreements.[6, 7]

Wholesale energy market prices are influenced by a number of factors. Naturally a key factor is the cost of the commodity – the fuel cost[8], but two further factors are the level and effectiveness of competition in the energy wholesale and retail markets.

If competition in the retail market were thriving, we would expect energy suppliers to challenge the level of prices on offer in wholesale energy markets to get the best possible prices, so they could retain their existing customers and attract new ones as consumers drive competition by seeking out the cheapest deals. However the reality is quite different, with weak retail competition. People cannot understand and compare prices, and three-quarters of households are not on their cheapest possible tariff. Which? estimates that those households are collectively overpaying £4 billion annually in the retail market. As demonstrated in the Which? report *The Imbalance of Power – The Retail Market,* the energy retail market is an oligopoly of six large, vertically-integrated suppliers that do not face genuine competition for the vast majority of their customers.

Thus the retail market does not drive competitive processes in the wholesale energy markets. There is little sign of energy suppliers challenging wholesale prices and thus putting pressure on generators and producers to ensure their costs are efficient.

With the retail market failing to drive competition, it is even more important that competition within the wholesale energy markets is effective to ensure that the price consumers pay is not inflated.

1.2 Consumers prices today

The cost of electricity and gas from the wholesale market constitutes around 60% of domestic energy bills, with the remaining 40% representing the remaining various costs associated with supplying energy through companies' retail arms.[9] This means that £852 of the average household energy bill of £1420 is made up of wholesale energy costs.[10] Increases in wholesale energy costs have been the primary reason cited by suppliers for the general rise in consumers' energy bills.[11] The increase in household energy bills has been substantial: since 2001 electricity bills have risen by 66% and gas bills by 137%.[12]

However, consumers mistrust the claims made by suppliers about why their prices are increasing. Despite suppliers' assertions of very low margins from their retail businesses, 84% of consumers think price rises are due to energy companies increasing their profits, rather than meeting increased wholesale costs, and 64% disagree with the statement that their supplier prioritises customers over profits.[13] The majority of consumers do not trust energy companies,[14] and their main reason for this was that they thought energy companies were greedy and made too much profit.[15] This is not surprising, as group profit increases have often swiftly followed the latest round of price increases.

This suspicion contributes to the low levels of trust that consumers have in energy companies. Energy companies say they want to rebuild trust, but this will not begin to occur until consumers are confident that their retail prices and the underlying wholesale costs are fair.

1.3 Consumers prices tomorrow

Ensuring that wholesale energy markets are truly competitive is as important in determining the prices consumers will pay in the future as it is for determining today's retail prices.

Significant investment in new electricity generating capacity is urgently required[16] and the wholesale energy markets should play a role in encouraging companies to make that investment.[17] Price information from the wholesale electricity markets should reveal commercial opportunities for prospective or existing generators and give confidence that engaging in the markets will help manage commercial risk. To attract investment from a range of organisations – not just the six large vertically-integrated energy companies – investors must have confidence that the wholesale energy market is competitive, and that they have a fair chance of generating a return.[18] Robust wholesale electricity price information will also be central to ensuring that consumers get a fair deal from the Government's Electricity Market Reform (EMR),[19] which is designed to bring on future investment.

However the current arrangements fail to do this: they neither give consumers confidence in the prices they are paying today nor investors the confidence to invest for the future.[20] This report looks at how this state of affairs has come about and considers what can be done to remedy the situation.

60% or £852
of consumers' bills are down to wholesale costs

84%
of consumers think price rises are driven by increasing profits

How the wholesale energy markets operate

This chapter provides a descriptive background for the analysis in the following chapters

2.1 The wholesale energy markets have multiple purposes

The markets are platforms to enable parties to buy and sell energy. This could be to meet medium to long-term energy supply needs or to enable a supplier to balance its supply and demand on the day.[21] The wholesale energy markets also produce wholesale energy price information although, as this report later sets out, the availability and quality of much of the price information is limited. While the market will only give pricing indications for a year or two ahead, compared to the decades considered by prospective investors, its information does feed into decisions on whether it would be commercially profitable to invest in the market, as does the transparency and credibility of the market itself. Another role of the wholesale markets is to enable the commodity cost of gas and electricity to be challenged, keeping costs as low as possible and prices efficient.

The description provided in this chapter covers both the electricity and gas wholesale markets. However it is worth noting that the nature of electricity adds complexity to the wholesale electricity market. This is because electricity is unlike other commodities. It is impossible to trace electricity from a particular generator to a particular customer and electricity is rarely stored (storage is very expensive and where it does occur tends to be in the form of hydro). What is more there are very tight physical parameters, such as frequency and voltage, that must be maintained when it is transported via the grid system that require second by second management across the system. Parameters in the gas system, such as pressure, have more physical give.

2.2 The wholesale gas and electricity submarkets

The gas and electricity markets are distinct and separate with each comprising a number of sub-markets. (There are some gas and electricity cross market interactions, see 2.1.8.) There is no official classification for many of the sub-markets, rather they tend to be defined based on the time frame for delivery of physical energy bought through that market or equivalent financial products. For example, the day-ahead market is for energy bought the day-ahead of its delivery date (Table 1). There is also overlap between some markets, for example the 'near term' and 'prompt' markets are terms used to describe anything bought less than a month out from delivery up to and including the day-ahead. This can result in further clarification being required when focussing on specific time frames.

Terminology such as 'further out' or 'further along the curve' is often used to describe the forward markets. Both refer to the period between purchase and delivery. The longer the period between the two, the further out the product, market or trading activity is.

The gas and electricity markets are distinct and separate with each comprising a number of sub-markets

The sub-markets can also be sub-divided according to their form. One option is OTC trading. Much OTC trading is through brokerages who facilitate OTC trades between two parties, the majority of which is uncleared[22] (see 2.4). The OTC trades can either occur over the phone or directly via the broker trading screens. The alternative is to base the sub-market on one or more exchanges (Table 2) – platforms that provide physical and financial trading. Those trading on an exchange can either participate in continuous trading (where products are available on a continuous basis) or in an auction. The parties will trade anonymously with other parties and the credit risks between the parties are borne by the exchange clearing house.

The prices paid by companies buying and selling energy are not publicly available. To meet a need for that information, price reporting agencies such ICIS Heren and Argus compile wholesale price indices, which they make available to subscribers. This is done by compiling known trades, and by calling around a selection of OTC brokers and traders, around the time the market closes to get the traders' take on the day's OTC trading activity and the prices paid. This may include traders from some or all of the six large vertically-integrated energy companies. Once the information is compiled, an assessment is made to address or remove any price information that is deemed unreliable. The sources are combined to give market indices for various prices such as day-ahead or month-ahead. As Chapter 4 sets out, Which? thinks the process for data collection is vulnerable to manipulation.

Table 1: The sub-markets of the gas and electricity wholesale markets.

Time frame/ time from delivery	Sub-market
Within-day	Spot
Day-ahead	Day-ahead or part of prompt or near term
Day-ahead to between 1 to 2 months	Near term or prompt
2 months and beyond	Forward for physical products (Future for financial products)

2.3 The wholesale energy markets provide physical and financial products

Parties such as generators or suppliers may engage in the market to secure physical energy supplies, to hedge financial exposures or simply to speculate. To do this they may buy both physical and financial products (derivatives and other financial instruments).

Different physical product ranges will be available from different platforms. Power exchanges offer more standardised products, and many OTC contracts are also standardised but can be tailored to the needs of those involved.

Examples of physical electricity products include power to meet base load (the electricity always needed, even when demand is at a minimum) and power at peak load (needed only for the hour or two of maximum usage, usually in mornings and early evenings). These can be bought in particular volumes (measured in megawatts, designated MW), often referred to as clip sizes, and for set periods ranging from many hours, for baseload, to as short as half an hour for the peak period. There are also shaped (or profiled) products that are contracts for specific amounts of electricity to be delivered at different times.

Financial products, including derivatives, enable companies buying the energy to protect themselves against changes in energy prices, ie to hedge the company's position. These financial products may also be used purely for speculation.

2.4 There are two routes for engaging in the markets

Participants can engage in the market through two routes – OTC trading or exchange-based trading. Either can be used to secure a price immediately. Exchange-based trading can also take place via an auction, in which the exchange derives a single price (on a regular time basis) from the buying and selling bid offers submitted to the auction.

In addition the electricity generators or gas producers can enter into longer term structured contracts with suppliers (Box 1).

Table 2: The different sub-market platforms. NBP ICE-ENDEX[23], APX[24] and N2EX[25] are commodity exchanges. OTC is primarily uncleared (see 2.4)

Sub-market	Gas market platform	Sub-market	Electricity market platform
Spot	National Balancing Point (NBP)	Spot	APX, ICE-ENDEX
Day-ahead	NBP, OTC	Day-ahead	N2EX, APX, ENDEX and OTC
Near term or prompt	OTC	Near term or prompt	OTC, N2EX, APX, ENDEX
Forward	OTC	Forward	OTC

2.4.1 OTC trading is the dominant form of trading in the wholesale electricity and gas markets

OTC trades account for 80% of electricity and 70% of gas traded in Britain (see Table 3)[26]. These trades are done either over the phone or via a screened service through brokers such as ICAP, Marex Spectron Group and Tullett Prebon.

In Britain the vast majority of OTC trading is uncleared (see Table 3).[27] In uncleared OTC trading, the collateral and credit risks and agreements are between the trading parties (the buyer and seller), not the broker. These trades are confidential commercial bilateral transactions and consequently, the information relating to these trades, such as the prices, volumes and products, are not made publicly available. The screen based OTC trading provides information of prices and volumes to those using the service, but again this is not publicly available and is not compiled into price information. This is the need that price reporting companies (see 2.1.1 above) aim to fill for their subscribers, by compiling and assessing information about trades that have taken place to provide indices of the price but as Chapter 4 sets out there are serious questions around the reliability and robustness of the price indices.

The small proportion of cleared OTC will go through clearing houses or across exchanges.[28] In this case the trading platform acts as a clearing house that will manage post-trading, pre-settlement credit exposures, to ensure that trades are settled in accordance with market rules, even if a buyer or seller should become insolvent prior to settlement.

2.4.2 Exchange based trading is regarded as more expensive than uncleared OTC

OTC trading is considered to be cheaper than exchange trading; this is because of the fees charged and collateral terms. The exchanges charge fees to trade via the platform, as do OTC brokers. However, unlike OTC brokers, the amount of collateral exchanges require participants to post is greater and the availability of funds to meet these requirements are considered to be a barrier to using the exchanges.

If a company intends to do a lot of trading across a particular exchange, they can put in place a gross bidding agreement (GBA). This means that, instead of being charged fees for all their trades, both buying and selling power, their charges are based on the difference between the two. It is intended to encourage companies with both generation and supply businesses to do all their trades on the exchange, rather than self-supply within the company or use OTC and come to the exchanges only to make up the difference. But although the six large vertically-integrated energy companies all now have GBAs with one of the largest exchanges, N2EX, the generation and supply arms do not go to N2EX separately and engage in trading. The two business arms still put in a combined 'netted – off' bid setting out the volume they want and the prices they are willing to pay or receive. So while there may be increases in absolute volumes this does not necessarily result in greater competitive pressure that would more likely be achieved if the

Box 1 Longer-term structured contracts in gas and power purchase agreements in electricity

Energy can be bought and sold through long-term structured contracts, known as power purchase agreements (PPAs) in electricity or gas supply agreements (GSAs) in gas. These are direct contracts between two parties – a generator or producer and a supplier or trader. The contract will set out all the commercial terms – volumes, payment terms and penalties for under delivery. The terms can be very long - 15 year contracts are common in the GB market. PPAs play a key role in financing independent generation.

two business arms went to the market independently.

Exchanges publish limited data from the trading on their platform on their websites. This can include, for example, average auction prices and average continuous prices, with more granular data available at a cost.

2.4.3 Market participants include generators, suppliers and financial players but there are no 'official' market makers in the GB market

Along with energy suppliers and generators, many banks and financial institutions also engage in the wholesale energy markets. Financial players are often considered to play an important role as their trading activity may facilitate better price discovery. Financial organisations may also provide auxiliary products such as derivatives and act as intermediaries. For example, by entering into a relationship with a small supplier where the bank buys energy from the wholesale market and then sells some of it to the small supplier. By doing this the small supplier is able to buy the right volumes of energy to meet its needs.

Market makers are found in many financial and commodity markets, but there are no 'official' market makers in GB wholesale energy markets. A market maker is a market participant that simultaneously quotes a firm bid price (the price at which it is willing to buy) and offer price (the price at which it is willing to sell) for a given product. They are often associated with exchanges, and some exchanges will have designated market makers. The market maker guarantees that buyers and sellers will be able to transact trades, and they guarantee liquidity.[29] In the German and Nordic markets, market makers are thought to have played an important role in creating and sustaining liquidity. Currently, there are no 'official' market makers in the GB wholesale energy markets. Traders by virtue of their engagement in the markets will act as market makers in their activities. But they are doing so to fulfil their own commercial objectives and do not provide guarantees of volumes of trading or trading in certain markets or time frames, where it may be needed most. Ofgem is now proposing to put in place a market-maker obligation on the large vertically integrated suppliers, see Chapter 5.

2.5 Determining what volume of physical and financial trading occurs is not possible

As the majority of wholesale gas and electricity trading is uncleared OTC and these trades are not in the public domain, it is not possible to determine what actual physical volumes of gas or electricity go into the market. Further, traded volumes are not the same as physical volumes which go through the market. For example there may be a traded volume of 1000 TWh, but that may refer to 200TWh of physical electricity that has been traded five times on paper. This is further complicated in gas versus electricity, where the National Balancing Point (NBP) is also used to deliver gas not just trade it, so volumes into NBP do not equate to volumes traded.

Based on the available information, best estimates of traded volumes are set out in Table 3. The self-supply internal markets within the vertically-integrated companies are not included in Table 3, though it is thought that these self-supply markets may be the largest in terms of volumes of electricity bought and sold.[30]

The volume of trading over N2EX has increased considerably since 2011 from 18.7TWh in 2011 to 94.8TWh in 2012.[31] This now appears to have levelled off at between 2.5 and 3 TWh a week.[32] It is also worth noting that this volume may have shifted to N2EX from another part of the wholesale electricity market and is not due to an increase in the absolute volumes being traded. Chapter 4 explores this point further.

Financial trading provides the products that enable market participants to hedge their positions and/or form the basis of financial speculation. The financial trading supporting the electricity market is very small – in 2012 it was less than 3% of all trading[33] and it has now dropped to 0.3 per cent of volumes traded in the wholesale market so far in 2013.[34] As Figure 2 illustrates there was a peak in March 2012, but the reason for this is not known (Figure 2). We have not been able to source equivalent data for the secondary financial gas market.

Table 3a and 3b: Structured contracts and trading volumes

Table 3a: Structured Contracts and PPAs for gas and electricity, proportion of consumption

Volumes (equivalent)	Gas	Electricity
Structured contracts and PPAs	~50% of consumption[35]	Not Available[36]

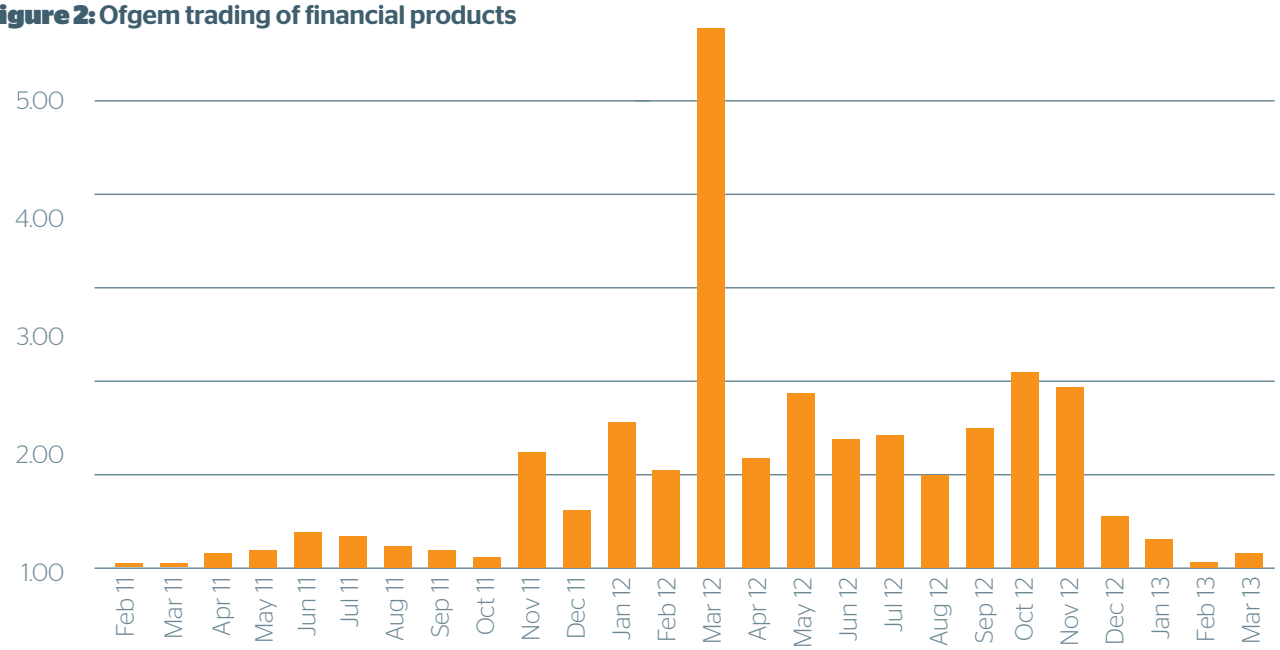
Table 3b: Exchange and OTC trading for gas and electricity 2011- 2013 total volumes

Type	Platform	2011	2012	2013*
Gas[37,38]				
OTC	Brokers	13,093.3	12,453.5	4,102.36
Cleared OTC	Brokers	532.17	730.18	259.47
NBP♦ (spot and OCM)	ICE- Endex	137.6	137.4	75.85
Electricity[39,40]				
OTC	Brokers	1,054.2	869.75	285.3
Cleared OTC	Brokers	36.25	56.5	3.9
Spot and prompt	APX	13.7	13.7	7.1
	N2EX	26.86	37.95	2.7

*Figures for OTC, cleared and uncleared, as to the April 2013; NBP figures up to and including June 2013; APX figures are up to and including June; and N2EX figures to end of May 2013.

♦The volumes going through NBP include all gas for physical delivery, regardless of where they are traded.

Figure 2: Ofgem trading of financial products



Source: Wholesale power market liquidity: consultation on a 'Secure and Promote' licence condition, Ofgem, December 2012. Ofgem have not been able to find an explanation for the peak in activity in March 2012 and as the graph illustrates, it has not been sustained.

2.6 Each market has its own role to play: it's not possible to state which is more important than others

Participants in the wholesale energy markets will use different markets to meet different needs. The spot market, for example, may be used by suppliers to balance supply and demand positions so that they avoid being penalised for having too little or too much energy. Trading further out, whether it is three months or three years out from delivery, may be used by suppliers to lock-in prices well in advance, to hedge that position.

The move to a single European electricity market, via the European Target Model, and the implementation of the EMR will mean that certain markets play new, additional roles. The EMR will use wholesale price information, derived from the markets, to determine the level of subsidy consumers will pay to support investment in low carbon generation.

2.7 Regulation of the markets falls to both Ofgem and the Financial Conduct Authority

Ofgem regulates many of the participants in the physical market – the generators and suppliers. The Financial Conduct Authority (FCA) regulates the exchange platforms, such as the day-ahead exchange N2EX or the within-day exchange APX. They are subject to the European Markets in Financial Instruments Directive (Mifid). This directive is in the process of being updated with the introduction of Mifid II. Mifid II is part of a package of three regulations that will cover OTC energy trading and gives Ofgem specific powers. The details of these are set out in Chapter 5.

The balancing markets are specialist markets designed to meet the physical needs of the system at the time of delivery, ensuring that there is neither too much too little electricity nor gas in the physical system at any one time. These fall within Ofgem's jurisdiction.

The regulators have a memorandum of understanding to determine which of them will lead on specific areas of work or investigations.

2.8 The relationship between the gas and electricity markets

The wholesale gas markets influence wholesale electricity prices in a number of ways. For example, gas and coal are the primary fossil fuels used to generate electricity, together accounting for over 80% of electricity generation.[41] Gas is also usually the marginal fuel, which means gas plants will be used to meet peaks in demand and will set the higher peak and spot prices. Finally, some companies hedge their electricity positions with purchases in the gas markets, making use of the high degree of correlation between gas and electricity wholesale prices. This is called a 'dirty hedge' and companies may do this because there is less volatility or they have more confidence in the gas markets and their ability to use these markets to manage (hedge) the risks of their electricity purchases than by directly engaging in the electricity markets.[42]

The influence of the large vertically integrated suppliers across generation and supply

There are a number of companies that exist in both the retail supply market and the wholesale energy markets. The six major suppliers[43] do not just supply customers; they are part of larger companies that also generate electricity,[44] trade energy to meet their own needs and to speculate,[45] and in some cases have gas production or storage assets.[46] The supply divisions of these six serve 98% of the domestic retail market and the generation businesses are responsible for 70% of total GB electricity generation capacity and output.[47]

3.1 Vertical integration in the energy sector

Vertical integration is a model common to many European energy markets (Box 2). In theory vertical integration delivers efficiencies and reduces costs to the company. The nature of electricity generation assets – they are expensive to build and have a long life – makes vertical integration an attractive structure for companies because it helps reduce and smooth future risk. This is because the electricity generator will always have a buyer for some or all of its output at a price that it can have influence over. And it provides a high-level hedge for fluctuating relative profitability across the wholesale and retail sides of the electricity market. Vertically-integrated companies can also avoid credit and collateral costs.

But as well as helping manage risk, vertical integration is a business model that inherently lacks transparency. The different divisions or businesses – electricity generation, gas production, energy retail – can be sister businesses or divisions within the same company. While there will be separate management for each business division, these all fall within the management of a single group board. As a result, it is impossible to see the dynamic or relationship between the different business divisions – for example, to what extent is one business arm exerting pressure on the other? The dynamics between the different divisions will affect the price consumers pay and may differ between companies.

The exception is transmission and distribution networks, discussed below. A licence for one of these companies requires legal separation from generation or supply businesses and prevents the sharing of confidential information.[48] The network operator must assure equal access for all users.

Box 2 Vertical integration is common in other European countries

Vertical integration is not unique to the GB market. Four of the six major companies – RWE npower, EDF Energy, E.ON UK and ScottishPower – are part of large European utilities, which have vertically-integrated businesses along the value chain of energy production to supply. The largest companies in the Nordic market are also vertically-integrated. But in GB, there is greater market concentration in generation and supply and as a result, the vertically-integrated companies are in a more dominant position.

3.1.1 The structures of the large vertically-integrated companies are multifaceted and can be complex

In addition to the supply and generation businesses, vertically-integrated energy companies often have dedicated trading businesses, as well as the trading functions directly associated with their supply and generation businesses. Two of the six major companies (SSE and RWE Npower) have 'tolling' businesses within or alongside the generation business. This 'tolling' structure separates the generating capacity available and the electricity produced from using that generating capacity. This gives a return that is independent of the electricity volumes actually produced, from the part of the business charges to access the generation plant (the tolling business). While this structure is no more physically vertically integrated than those companies without tolling businesses, there is an additional vertically-integrated 'virtual' business.

A number of the six have had, and two (SSE and ScottishPower) still own, distribution and network companies. The rules around ownership of transmission businesses are considerably more stringent than co-ownership of generation and supply businesses. There are strict rules determining the nature of the relationship between the transmission company and any other companies owned by the group in order to prevent any financial exploitation of the co-ownership. The functional separation of the network business has to be certified by the European Commission.

Further examples of other businesses owned by the six major energy companies are gas production and storage facilities and home services businesses.

The end result is multifaceted and complex companies. For example, ScottishPower is part of Iberdrola, a Spanish global energy company. ScottishPower has an energy production and retail arm split in two: the first part contains a single business – Scottish Power Renewables – while the second contains the remaining businesses including Scottish Power Energy Retail and Scottish Power Generation. Scottish Power Generation is the sole customer of ScottishPower Renewables. Iberdrola also has a Scottish company that owns electricity networks, but like other network companies, this operates under different rules and does not participate in the energy market. The other five large vertically-integrated companies have similarly complex structures.[49]

While these companies are all vertically-integrated with electricity generation assets, there is not the same degree of vertical integration in gas supply. For one thing, gas has a wider variety of companies in the supply chain as it overlaps with the oil market.

3.1.2 There has been horizontal integration of energy businesses

Over the same period that saw vertical integration of different energy businesses, there was also horizontal integration, as generation businesses and supply businesses underwent consolidation.[50] The end result is that just six large vertically-integrated energy companies now supply 98% of the domestic retail market and account for 70%[51] of total electricity generation in Great Britain.

Together the six have enough electricity generation capacity to supply the entire domestic and small business sectors.[52] Each of the six major companies can at least match its domestic electricity supply needs from its generation capacity (Table 4), but they may have business customers too. So, although they could match a large part of domestic demand to their supply, some are likely to have long-term contracts in place and go to the wholesale markets.

Table 4: The evolution in match between generation volumes and supply/demand needs in the six large vertically-integrated energy companies. Less than 1 signifies more supply need than generation output capacity, 1 is a perfect match and greater than 1 illustrates more generation output capacity than supply need.

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Centrica (BG)	0.34	0.46	0.47	0.61	0.86	0.98	1.05	1.25	1.0
EDF Energy	n/a	n/a	n/a	1.28	n/a	n/a	1.8	3.93	4.65
E.ON UK	n/a	1.2	1.31	1.32	1.32	1.67	1.50	1.41	1.36
RWE npower	1.51	1.44	1.5	1.64	1.52	n/a	1.48	2.02	1.91
ScottishPower	n/a	n/a	n/a	0.9	n/a	n/a	1.69	2.01	1.78
SSE	n/a	n/a	n/a	1.77	n/a	n/a	1.43	1.31	1.92

3.2 Vertically-integrated companies can source their customers energy through a number of routes

There are three routes through which the large vertically-integrated companies source energy for their customers (also see Figure 1):

- The vertically-integrated company self-supplies – it sells power or gas from its generation or production business to its supply business
- The vertically-integrated company buys or sells electricity or gas from another supplier through long-term contracts. The other company may be large or small, an independent or another one of the large vertically-integrated energy companies
- The vertically-integrated company sells to or buys from the wholesale energy markets

However there is a lack of transparency. As a result it is not possible to determine how much energy goes through each of those routes or what combinations are used, let alone the prices paid. In 2010 it was speculated that the self-supply market was the largest in terms of volumes of electricity bought and sold.[53] In gas, the balance between the three routes is different because there is less vertical integration of gas production, as a result the companies are less able to self-supply and so have to enter into long-term bilateral contracts and go to the market. Beyond this, no further information is available.

3.3 Companies' ability to self-supply and large market shares damage the transparency of wholesale energy costs and the openness of the supply and wholesale energy markets

3.3.1 Self supplying reduces transparency

The extent to which each of the six large energy companies self-supplies through its internal market is not known, and varies depending on their individual generation portfolios and will likely supply needs.

When the companies do self-supply, the prices the upstream electricity generation or gas production business (or tolling business[54]) charge the supply business are not published. This reduces the amount of available price data and prevents any scrutiny of the prices paid by these businesses and consumers.

Furthermore, if these very large generating companies chose to sell most of their power outside the wholesale electricity markets the lower volumes of electricity being traded will reduce the effectiveness of the wholesale electricity markets because there is less electricity is available for trading. Equally, if the supply divisions of these large companies get their energy internally, they then have less of a need to go to the wholesale market and challenge the wholesale energy costs being offered.

In gas, the impact of self-supplying on the effectiveness of the market is not so clear. There are more participants with smaller market shares, but there are issues of market power in the production of certain types of gas – such as 'dry' gas, where only a few companies provide the 'dry' gas that is primarily used for seasonal demand. [55]

3.3.2 Gatekeepers to the markets

There are concerns that the dominance of the six large vertically-integrated companies in the electricity generation and domestic supply markets is having a detrimental effect on independent suppliers and generators.

As major generators, these six are often sources of electricity for independent suppliers. However, when trying to buy energy from the vertically-integrated companies, the independent suppliers have faced a number of issues, for example a lack of response and offers limited to electricity volumes that are too large.[56] (Ofgem is proposing to put in new rules to address this, see Chapter 5.) And within the retail market, there have also been claims that the large vertically-integrated companies develop loss-leading tariffs to undermine the offers of the independent suppliers.[57]

Similarly, independent generators, particularly the renewable generators, find that contracts are either not available or are not at reasonable terms.[58] These problems add to the liquidity issues with the wholesale electricity markets discussed below (4.2).

3.4 The large vertically-integrated companies have substantial influence. The question is, how do they wield it?

The six large energy companies have the ability to influence the dynamics of both the supply and wholesale energy markets. As our report *The Imbalance of Power – The Retail Market* concluded in December 2012, Britain's retail energy market is broken. The retail market is essentially an oligopoly of six large companies that do not face genuine competition for the vast majority of their customers.

The way the influence of these large vertically-integrated companies manifests across the retail and wholesale energy markets is not clear. It is impossible confidently to track the relationship between wholesale costs and supply prices. There are a number of factors driving this:

- There are three routes that can be used to secure energy, which can be used in different combinations
- One of those routes is self-supply by major players, which is considered to be a significant route and which occurs behind

closed doors, so fails to provide robust public information

- Hedging is important to help manage costs, but it has been used to justify quick price increases and slow price reductions. There is little transparency in hedging activity, which means it is impossible to know how much energy was bought when, what price was paid for it, and how it translates into an average cost.
- It is impossible, understandably, to see the underlying commercial strategy that assigns risk and margins across these large vertically-integrated companies.

However, we do know that retail competition is weak. And until there are substantial reforms to transform the retail market, the ineffective competition in the retail market will limit how much pressure it can exert on wholesale energy costs. But as this report goes on to set out, maximising the benefit of this pressure also requires changes to the wholesale markets.

Over recent years as consumers energy bills have increased, the large vertically-integrated energy companies have responded to challenges about the level of consumers' energy bills and level of competition in the retail market by often saying they are doing all they can to keep prices low, stating that:

- The retail market is highly competitive; [59]
- Their energy supply businesses make little if any profit;[60]
- The wholesale and supply arms of the business act independently, each in its own interest, with no negative impact on competition in either market;[61]
- Where there is self-supply, the prices at which energy is sold internally will be based on any available external references;[62]
- Consumers benefit from the vertically-integrated business model as it reduces risk and costs, and improves efficiency.[63]

It is not surprising that consumers are sceptical of such claims – with 84% of consumers think price rises are driven by profits rather than wholesale costs[64] – when price rises by the major suppliers are rarely far away from announcements of yet more rises in group profits.[65] Below we examine the evidence to support each of these claims.

3.5 The basis of these claims can often be strongly questioned

3.5.1 'The retail market is highly competitive'

As recognised by Ofgem and Government, and as our own report *The Imbalance of Power – The Retail Market* clearly demonstrated, ineffective, weak competition is well established in the energy supply market.

Supply divisions of the large energy companies do not appear hungry to grow significantly or worried about losing their customers.

The dominant supplier companies have been able to adopt strategies of comfortable co-existence rather than dynamic and aggressive rivalry to grow their customer base.

The limited competition that exists is played out in a small segment of the retail market where the six major suppliers and a few independents vie for the most determined and engaged consumers with attractive fixed-term deals. Large numbers of consumers are effectively excluded from the most competitive tariffs so even if consumers are willing to engage, their payment or online account management preferences prevent them from securing the best deals.

The launch of a market leading deal by an independent in 2009 halted an upward trend in prices by driving the major suppliers to create more competitively priced offers for online customers[66] (although consumers on standard tariffs saw little change). In 2012, it was another independent, Co-operative Energy, that won the Which? Big Switch auction and, at time of publication, Flow Energy offered the best price on the market.[67]

3.5.2 'Energy suppliers make little if any profit'

It is impossible to be confident about how much profit vertically-integrated supply businesses make as they can move margins up and down the value chain

Analysis for Which? by Baringa found that the average margins of the six large vertically-integrated energy companies across 2009 – 2011 in retail electricity supply and gas supply were 1.3% and 3.2%, respectively.[68] Within this period some suppliers had negative margins (Table 5).

This certainly appears to fit with the rhetoric from these six companies – that they make narrow margins on their supply businesses. However is not necessarily an indicator that these companies aim to offer consumers the best deal possible, even if it is at the expense of market pressure on their supply margins. Nor does it show that there are incentives driving these companies to deliver low and efficient energy prices for consumers.

Around 60% of the price consumers pay is derived from wholesale energy costs. In contrast to the margins in the supply businesses, margins in electricity generation (from sale of wholesale electricity, not tolling businesses) across 2009 – 2011 were on average 14.1% for these six large vertically-integrated energy companies[69]. A full breakdown is presented in Table 6.

When the electricity generation and supply (gas and electricity) segments of these businesses are combined, the businesses generally appear to be performing well, with many of them seeing year on year increases in profitability (Table 7).[70] It is important to note that Table 7 doesn't reflect whole businesses – trading, tolling or gas production divisions are not included. Another example, is RWE npower. While RWE npower had negative margins in 2010 (Table 6), the whole RWE group profits release for 2010 sets out an overall international operating profit increase of 8% and an increase of 6% at the UK level.[71]

As this data demonstrates, these vertically-integrated companies are able to do well overall while experiencing low margins in one part of the business, nationally or internationally. The ability of companies to move value around nationally and internationally, and to remove profits from one part of the business and report them elsewhere is recognised by Ofgem.[72] In a recent Energy and Climate Change Select Committee evidence session the movement of value internationally came

into the spotlight as a route through which energy companies could avoid paying tax. Evidence given by Paul Massara, Chief Executive of RWE npower, has resulted in allegations of UK tax avoidance by RWE npower, which they have refuted.[73]

The movement of value within vertically-integrated energy companies has been described as their ability to chase margins up and down the value chain, and historically it has not always been the supply business that fared badly. Wright et al illustrated the ability of vertically-integrated companies to move and or split margins within their business, enabling them to balance low margins in certain divisions against an overall positive company performance. Analysis based on Centrica's accounts (the most comprehensive available data) found that between 2003 and 2009 the source of the company's profits moved from one part of the business to another, from supply, to production, to storage.[74] And across the same period (2003 – 2009) Centrica's total operating profit increased by 87%.

One way to achieve this movement of value between companies, or to guarantee margins, could be by increasing the prices charged for wholesale energy. This could result in negative or low margins in the supply business, depending on how much of the increased wholesale price the company passes through to its customers.[75] At the same time, the generation arm would benefit from increased margins from the inflated wholesale energy prices. Whether this currently occurs is impossible to say because of the opaque nature in which these businesses are arranged and interact.

This also has a wider implication for attracting investment. Managing of margins would present skewed information for prospective investors or entrants which, combined with other market factors,[76] may delay necessary investment. We come back to this point later in this chapter.

Table 5: Electricity and gas domestic supply % profit margin, Baringa analysis of EBIT segmental accounts. *Average, not weighted for market share.

	Centrica		EDF Energy		E.ON UK		RWE Npower		Scottish Power		SSE		Av*	
	Elec	Gas	Elec	Gas	Elec	Gas	Elec	Gas	Elec	Gas	Elec	Gas	Elec	Gas
2009	7.9	7.4	-4.4	-13.5	0.5	-7.3	-5.4	-8.8	3.7	-0.9	6.3	-3.2	2.1	-0.3
2010	5.4	10.6	-5.3	-1.4	2.3	-2.0	-8.4	-0.4	-5.1	6.3	5.7	6.3	0.3	5.7
2011	4.8	8.1	-2.6	-9.0	6.6	-5.4	-1.9	-1.6	-8.6	11.4	3.7	8.6	1.5	4.3

Table 6: Electricity generation % profit margin, Baringa analysis of EBIT segmental accounts. *Average, not weighted for market share.

	Centrica	EDF Energy	E.ON UK	RWE Npower	ScottishPower	SSE	Av*
2009	12.8	14.5	18.9	2.0	11.2	19.6	13.5
2010	15.1	10.7	4.5	-0.8	14.2	15.2	9.7
2011	17.5	29.6	16.3	9.9	14.0	18.2	19.1

Table 7: Total electricity generation, gas supply (domestic and non-domestic) and electricity supply (domestic and non-domestic) profits (£millions), Baringa analysis of EBIT segmental account information. *Average, not weighted for market share.

	Centrica	EDF Energy	E.ON UK	RWE Npower	ScottishPower	SSE	Av*
2009	832	199	330	-223	307	598	340.5
2010	1180	405	317	-106	314	678	464.7
2011	994	915	523	240	264	721	609.5

3.5.3 'The wholesale and supply arms of the businesses act independently'

While the supply and generation functions in vertically-integrated companies are often separate legal entities, the governance and management is joint. Furthermore, the different divisions often share regulatory teams as well as trading or optimising functions. And, as set out above, energy is bought and sold between the divisions. However, there are a number of further points that challenge the claim that these businesses act independently.

There was a 10% increase in supply prices in 2011 but analysis for Which? put this at odds with the best available wholesale price data available.

Analysis using information from the consolidated segmental statements[77] – the best available wholesale market data – and hedging models that covered a range of scenarios, found that wholesale purchasing prices were flat [78]. There were no discernible increases in the prices in the forward curve. That would suggest that there should also be a commensurate minimal or zero increase in consumers' tariff rates. However the six large vertically-integrated energy companies increased their tariffs by an average 10%, quoting increases in wholesale costs as the primary driver.[79]

Had a single company done this, it could have been due to a poor hedging strategy by that company. That all the major suppliers displayed a similar pattern raises serious questions of the ability or willingness of the supply businesses in vertically-integrated companies to secure the best energy prices for their customers.

These are large companies, with multinational interests, and so the overall business strategy can override the interests of individual segments.

As we have seen, margins may be moved up and down the value chain. Additionally, EDF Energy is on record as saying the ideal situation is when a rise in wholesale energy costs can be more than compensated for by an increase in retail energy prices.[80] At an international level, in 2011 Scottish Power leant £800m to the US operation of its parent company (Iberdrola)[81] while at the same time increasing the prices it charged to its domestic customers.[82] Again, this raises questions about the extent to which supply businesses are able to truly secure the best prices for their existing or prospective customers, as well as of course, about their desire to do so.

3.5.4 'Where there is any self-supplying, the prices will be based on market data'[83]

The use of price indices is often cited as providing a degree of fairness to the transfer pricing (internal selling) process, yet the indices are compiled from informal data and through a process that is vulnerable to manipulation.

An investigation by the accountancy firm BDO, commissioned by Ofgem, into transfer pricing within the six large vertically-intergrated companies found a mixed picture[84]

First, transfer prices were often but not always based on wholesale energy market price information. If the company considered the particular wholesale market to be illiquid and not a reliable source of efficient wholesale energy prices, or it

felt there was insufficient wholesale energy price data available, the company would adjust the price information to be 'appropriate'. Second, transfer prices may also be determined by the companies' internal modelling, not wholesale energy market price information. As such it is impossible to determine the fairness, or even the level, of the price offered to the supply businesses within these vertically-integrated companies.

BDO found the six large vertically-integrated companies tended to self-supply electricity volumes for delivery in three or more years in the future. The wholesale electricity market this far out is particularly illiquid, which reduces confidence that the prices offered are fair or efficient (described below, in Chapter 4). As a result Ofgem questioned whether the transfer prices charged to the supplier for self-supplying in this time period were fair or competitive.[85]

The available wholesale energy price information is derived through a process that is vulnerable to manipulation

The wholesale price indices that may be used in transfer pricing are based largely on data gathered through processes that are vulnerable to manipulation (section 4.2). The low levels of liquidity in the wholesale electricity markets also damage confidence in the prices produced from trading in these markets (section 4.1). Further, there have been allegations of gas market price manipulation (section 4.3).

Wholesale price indices are based on a snapshot of traded wholesale energy costs

Compounding the doubtful robustness of the wholesale energy market data, is the actual volumes of energy that go through these wholesale energy markets. While it is impossible to fully determine, one estimate made in 2010 was that in the region of volumes equivalent to only 10% of consumption went through the markets,[86] with the remaining energy either being self-supplied or being sold via long-term contracts. Consequently, it is a small sample size of trading activity that sets these wholesale energy price indices, which in turn influence the prices used to set transfer price charges to suppliers, and so the prices being paid by consumers. This is explored further in section 4.3.

3.5.5 'Consumers benefit from the vertical integration business model as it reduces risk and costs and improves efficiency'

While the six large vertically-integrated energy companies may benefit from efficiencies and reduced risk, there is little evidence that this is shared with their existing customers in order to keep them or that it is translated into new competitive offers to attract new customers.

Consumers appear to have 'benefited' from an apparently unnecessary 10% price increase.

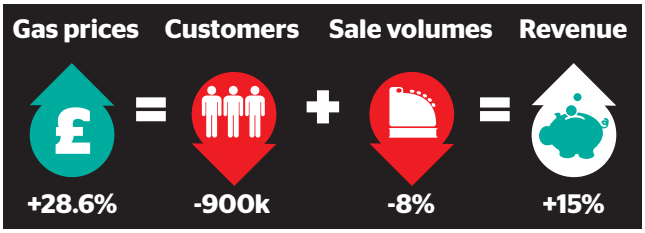
As described above, the vertically-integrated business model did not protect customers of all six major suppliers from an unnecessary 10% price increase in 2011.

The combination of an essential core product – energy – that cannot readily be substituted and the vertically-integrated corporate structures appears to go against the interests of consumers. It does not seem possible for shareholders and customers to benefit equally.

In direct contrast to the idea that consumers benefit from vertical integration, these vertically-integrated companies may actually make less money if they reduce prices, acquire more customers and even sell an increased volume of energy. And such is their market dominance that if they increase prices they may lose a marginal number of customers and sell smaller volumes, but gain an overall profit increase.

Analysis by Rutledge *et al*[87] based on data from Centrica found that it paid to increase prices. From 2002 – 2009, for both gas and electricity, increases in retail prices would often result in a loss of customers and reduced volumes. However, because the generation or production businesses benefited from the increase in prices by passing these through, total revenues for the company increased. Centrica's largest increase in domestic gas prices (28.6 %) was in 2006. It resulted in a loss of around 900,000 customers and an 8% reduction in sales volumes. But overall the company benefited from a 15% increase in revenue. In comparison, when Centrica reduced its electricity prices in 2007, it increased the number of customers, but sales volumes fell and the overall company revenue decreased.

The result of Centrica's 2006 gas price increase



The extent of Rutledge's analysis is limited by the lack of available information. Analysis based on the next best information, from E.ON UK, found similar results. This analysis is not conclusive; the lack of information prevents it being anything more than highly suggestive. However it's worth noting that it was not just Centrica and E.ON UK that increased their prices over this period. In 2004 – 2008 the six large vertically-integrated energy companies collectively made 77 alterations to their prices; 83% of these were price increases.[88]

There are four general factors that drive a conflict of interest between company and consumer

Which? considers that there are four interlinked factors that contribute to a conflict of interest between companies and consumers. The energy sector has all four.

First, there is a limited movement of customers between energy suppliers, which is a substantial contributor to the second point. Second, the large energy suppliers, have well-established and sticky customer bases. This is a result of

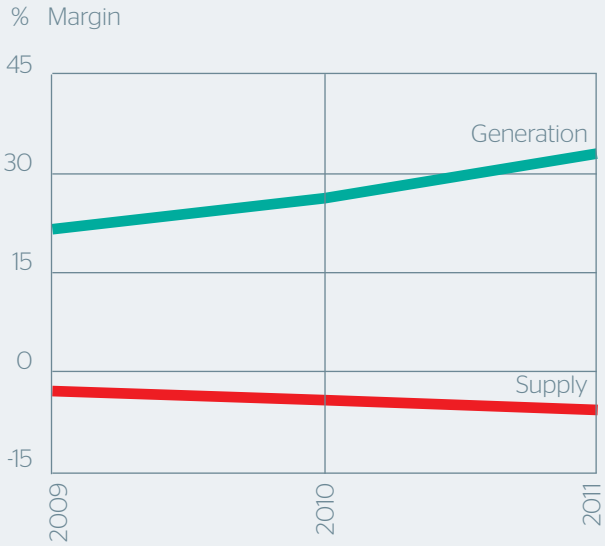
the combination of these suppliers legacy as ex-regional monopoly public electricity suppliers or the monopoly gas provider and the limited movement of customers. In contrast, new entrant suppliers (ie those who are not the ex-public monopoly provider) have to attract customers and then maintain and build their customer base. Third, there is minimal response from consumers in response to changes in price; not only do most customers not respond to price increase by moving away, they also don't reduce the amount of energy they consume. And correspondingly, where there is a price decrease, consumers show a minimal increase in the volume of energy they consume. Finally, there is vertical integration of generation and or production and supply businesses – so these companies both produce the energy and sell it to customers.

The result is thats should a vertically-integrated company wish to increase its overall profit and serve its shareholders, the easiest way to do it is to increase the price it charges for energy, rather than to get more customers. The limited response from consumers – either by moving away or by reducing their consumption – provides little incentive to these energy companies to keep prices low.

It may be logical for price inflation to occur within the generation or wholesale division of the company and then for this to be passed through to end supply prices rather than by inflating the retail margin or other non-wholesale aspects of end supply prices. By doing this, the company guarantees these inflated margins regardless of which supplier is the end supplier. It also supports on-going claims of low retail margins.

To explore the impact of increases in wholesale costs, modelling[89] commissioned by Which? looked at the impact across generation and supply businesses of a 30% increase in wholesale costs. 30% may seem high but this can translate into retail price increases in the region of 12% and it was for illustrative purposes. The modelling found that while these increases have a punishing impact on the supply business margins (falling from -2.6% to -5.2%), the overall margins increase year on year (rising 21.8% to 32.8%) (Figure 3).

Figure 3: Impact of 30% increase in wholesale costs on margins



Based on actual 2009 figures and then modelled for 2010 and 2011, based on Oxford Institute of Energy Studied modelling. Table shows the impact of 30% increase in wholesale energy costs on the relative profitability of the different business arms, highlighted in the blue boxes. In each year, the 30% increase in wholesale pieces is translated into a 12% increase in consumers' prices.

In conclusion

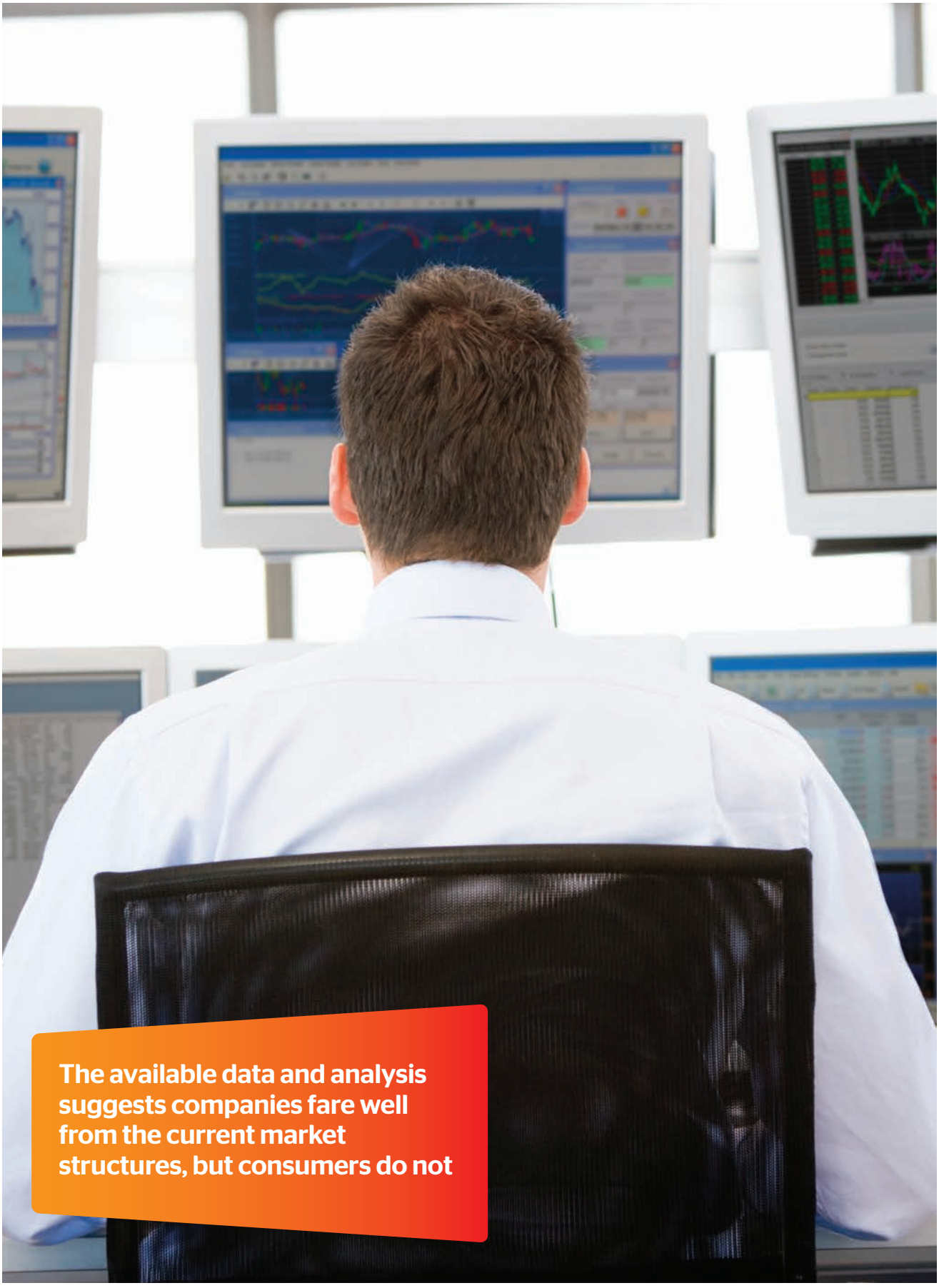
There is not enough information available to fully understand what is going on. There are no details of: what volumes of energy are self-supplied; what the levels are of transfer prices or what the dynamics are of the internal self-supply markets; how companies assign risks or margins across the businesses nationally and internationally; how changes in wholesale costs translate into changes in retail prices; or costs and margins in tolling businesses and trading arms. Much of this information is not available because it is commercially sensitive. But there appears to be little discussion of what more could be made available if anonymised or even a debate about vertical integration.

However, the available data and analysis suggests companies fare well from the current market structures, but consumers do not. The large vertically-integrated companies, with their large market shares, are able to win and deliver for their shareholders whether wholesale prices are falling, steady or rising. But their customers lose out:

- If wholesale prices fall, supply prices can be held or the reduction can be limited to a proportion of the reduction or only passed on to a segment of customers
- If wholesale prices stay the same, companies can chose not to change retail prices but there is little incentive or restraint on them to do so, and so consumers may pay more than they should
- If wholesale prices rise, companies can benefit from the increase in their production and generation margins, as well as being able to pass on this increase to their customers.

Rutledge's assessment of the impact of this is that it enabled the six large vertically-integrated companies to achieve an increase in profit of 85% in the period 2004 – 2009, while consumers had real gas and electricity increases of 97.8% and 54.6%, respectively, and consumption actually dropped by 6%.[90]

The six large vertically-integrated energy companies evolved from the market arrangements and they have since embedded a status quo that favours their interests, with unbalanced supply and generation markets. These arrangements were established with good intentions but in the energy retail market the current arrangements are leaving consumers and society vulnerable. And, yet, neither Ofgem nor Government appears willing to consider the risks associated with the dominance of vertical integration in this sector.



The available data and analysis suggests companies fare well from the current market structures, but consumers do not

Competition and transparency in the wholesale markets

A primary purpose of the wholesale energy markets is to drive efficient energy prices through effective competition. This should be based on robust wholesale price data as well as providing robust data. To be confident in the functioning of the wholesale energy markets requires evidence of effective competition and reliable wholesale price data, underpinned by robust processes and transparency. Without this it is not possible to have confidence in the price information. Beyond this, robust wholesale price data should serve other purposes.

- It should support effective competition by acting as reference prices to inform traders in continuous trading and form the base data to be compiled into indices
- It can be used by prospective investors and participants in the energy system to gauge commercial opportunities
- It should be used to assess the relationship between wholesale energy prices and consumers' tariff rates
- It will also be vital for determining the level of consumer subsidy for low-carbon generation through the Government's EMR programme.

However, in the British wholesale energy markets there are low levels of liquidity in the electricity market, ongoing investigations into allegations of manipulation in the gas market (4.1) and there is a lack of robust wholesale energy price information due to the dominance of uncleared OTC trading (4.2) and low volumes being traded (4.3).

As a result, it is difficult to have confidence either in the price information emerging, or that the prices being paid are as efficient as they could be.

4.1 Competitive and liquid wholesale energy markets?

Effective competition in the wholesale energy markets is essential if the markets are to deliver efficient prices. If the markets are not effectively competitive, consumers will pay more than they need because it stops new entrants coming into the market and challenging prices and it hampers more effective price competition from incumbent companies. It can also dampen and obscure investment signals, which in turn will lead to increased prices. In order to assess how effective competition is, a number of indicators can be used. For example, the number of participants, volumes or trades, the number of trades and the range of products available. Liquidity is a key measure, and the churn ratio and bid-offer spread taken together are good indicators of the level of liquidity (described in Box 4). This report primarily focuses on liquidity, churn ratio and bid-offer spread as most data is available for them.

4.1.1 Wholesale gas markets appear to be relatively liquid but they are not sufficiently robust to counter allegations of underlying manipulation

The NBP is the market hub for natural gas in the UK. It is considered to be a liquid and effective market[91], as demonstrated by a high level of churn[92] and tight bid-offer spread.[93] Compared to other European gas and commodity markets, there are higher volumes traded in GB and they also do so further along the curve.[94] A best estimate is that an equivalent of 10% of gas consumption volumes were traded OTC in 2010.[95]

Market investigations

In October 2012 two separate allegations were made regarding the gas market manipulation, the Libor-like nature of the indices, and evidence of suspect trading. The first relates to the lack of integrity in the data gathering system and is set out in 4.2. The second was a complaint made by ICIS Heren (a price reporting company, see 2.1.1) to Ofgem that it had seen evidence of suspect trading on 28 September 2012. This is a key date as it marks the end of the gas financial year and can have an important influence on future prices.[96] The allegations centre on prices being moved excessively down at times when the market was less liquid. It is the trading arms of a number of the large vertically-integrated companies that are the subject of the allegations. The allegation is that they did so to reduce the cost of gas relative to the price paid by independent suppliers, which then meant that independents had to either pass on higher prices to consumers or to limit the pass through, by shouldering all or some of the difference in price.[97] This has prompted the on-going investigations by Ofgem and the FCA.

Box 3 Liquidity, churn ratio and bid-offer spread

Liquidity

Liquidity is an important feature of a well-functioning market. Liquidity is the ability to easily buy and sell an asset, in this case power or gas, without causing a marked change in the price. High levels of liquidity should support new players and limit the market power of incumbents in the market.

Liquid wholesale energy markets give market participants the confidence that they can buy and sell at prices that reflect underlying demand and supply conditions. They allow firms to manage risk effectively and reduce the scope for market manipulation. Importantly, they also provide transparent prices on which firms can base their investment decisions, and potential entrants can assess opportunities to enter the market. If there is low liquidity, the ability to move a price with a few trades or even a single one is greater. As such, low liquidity contributes to price volatility and poor price transparency.

Liquidity can be assessed by the levels of churn (or the churn ratio) and breadth of bid-offer spreads.

Churn ratio

Churn measures the number of times a unit of generation or volume of gas is traded before being delivered to the final customer. Liquid markets are commonly characterised by a high churn rate, with each unit of output (physical volume) being traded many times.

The higher the churn ratio, the larger the number of willing sellers who are prepared to sell at a price (offer price) not much higher than the price at which a large number of willing buyers are prepared to buy (the bid price). The difference in the offer price and the bid price is the bid-offer.

The bid-offer spread

The bid-offer spread gives an indication of price robustness. A tight bid-offer spread shows that there are a number of active players in the market trading out as much excess profit as possible. The narrower or tighter the bid-offer spread, the better the competitiveness of the market. A narrow spread reduces transaction costs and gives market participants confidence that they will be able to fine-tune or get out of their position at low cost and risk.

4.1.2 Wholesale electricity markets are not liquid and are difficult places for independents to participate, which also affects the price consumers ultimately pay

Low liquidity of the GB wholesale electricity market is well recognised

There is little doubt that the GB wholesale electricity markets suffer from low liquidity.[98] GB has low churn ratios compared to other European markets, with particularly low traded volumes for products bought further out[99] and increasingly wide bid-offer spreads for products 12 months out.[100] The volumes of electricity traded also remain low. According to LEBA (2010) average daily volumes of OTC baseload and peak trades were 0.06TWh, approximately 6% of daily generation in 2010.[101] The APX-ENDEX spot market had 826,011 MWh of trades (2010), while APX as a whole traded 11.2TWh in 2008 – the equivalent of 3% of annual generation in 2010.[102]

The establishment of N2EX in 2010 began to improve the liquidity (and transparency) in the day-ahead market, and traded volumes have risen from 18.7TWh in 2011 to 94.8TWh in 2012[103] and now trades between 2.5 and 3TWh a week.[104] The increased volumes traded on N2EX[105] have been supported by commitments from a number of the large vertically-integrated energy companies to trade through this exchange. They have now set up gross bidding agreements (GBA, see 2.1.3.2) to do this.[106] Ofgem had previously proposed to secure this participation for the long term.[107] However in the latest set of proposals this has been dropped (see Chapter 5).[108]

While the six large vertically-integrated companies have announced their commitment to this day-ahead market, the gross bidding agreements between them and N2EX do not drive as much competition as they could. These agreements are based on balanced bids – where the supply and generation divisions put in bids that have equal amounts of power to be sold and bought, rather than the divisions putting in completely separate bids, with no disclosure of volumes or prices between the divisions. However in Nordpool, the primary electricity market used in Scandinavia (an operator of N2EX), there has been a move to using gross bidding agreements that commit to submitting separate bids in order to increase transparency and robustness in this market.[109]

Beyond this shift in the day-ahead market, the aggregate levels of churn in the electricity markets started to fall in 2010 and are continuing to do so – Ofgem's latest assessment found levels are marginally lower in 2013 than during the same period in 2012.[110, 111] This suggests that there has not been an increase in overall traded volumes, but rather that this increased activity in the day-ahead market has been pulled from another market.

Following a continued widening of the bid-offer spreads,[112] particularly for products further out,[113] there has been a narrowing since the start of 2013. However it is not clear whether this will be sustained, Ofgem has stated that the narrowing may be because traded volumes tend to be higher in the first quarter of the year and the fall in the gas spread over the same period.[114]

Due to the lack of substantial improvement Ofgem is proposing to require the eight largest generators (including the large vertically-integrated energy companies) to offer

reasonable terms to independents and to oblige the six large vertically-integrated energy companies to fulfil a market maker role, as Chapter 5 sets out.

Drivers of low liquidity

There is no single reason to explain why the GB wholesale electricity market is not more liquid. As described below, the growth of vertical integration with the ability to self-supply, low levels of interconnection and Enron's collapse have all contributed. On an on-going basis, generous capacity margins and the Carbon Price Floor may also be having a negative impact (see Box 4).

Vertical integration

The ability of the six large vertically-integrated energy companies to self-supply has had a negative impact on the liquidity of the wholesale power markets.[115] It gives these companies the option largely to bypass the wholesale energy markets and, since they also account for an overwhelming majority of electricity generated for sale, this significantly limits the volumes going through the market. This reduces the opportunities for independent generators and retail businesses to sell or buy electricity. It can also place the vertically-integrated companies in a stronger position when agreeing a contract with the independents – an issue recognised by Ofgem in 2009 and which the regulator has put forward proposals to address.[116]

As well as directly reducing liquidity, self-supply can also create a downward cycle of low liquidity and in doing so becomes self-reinforcing. Because smaller volumes are being traded and neither the generating nor supply divisions of the larger vertically-integrated companies have to engage substantially in the market, the markets will be less liquid. This reduces the confidence of other physical and financial market participants (existing or prospective), such as banks, which make fewer trades, that in turn reduces volumes being traded, the level of churn and so on. The end result is potentially inefficient prices and an ability to move the level of prices easily.

As noted by Ofgem, resistance by the large vertically-integrated companies to trade (whether buying or selling) further up the curve is likely to have compounded (and contributed to) the low level of liquidity.[117]

Interconnection

Great Britain has traditionally been an "energy island" and its wholesale electricity market supports less cross-border physical trade through interconnection than happens elsewhere in Europe that can act as a platform for trading hub. Consequently, while the German electricity markets form a physical hub that forms the platform for trading for participants from the surrounding countries, the GB markets are less able to operate in this way.

In contrast to electricity, there is a proportionately much greater volume of gas interconnection, though the same geographical limitations remain. This is through pipelines from Norway and liquefied natural gas that can be moved around globally, both of which contribute to greater liquidity in the wholesale gas market.

Box 4 On-going issues affecting wholesale electricity market liquidity

The Financial crisis

The on-going financial crisis may have driven the reluctance of financial organisations to offer derivatives and led to a tightening of the credit and collateral requirements of participants (regarded as one of the most significant barriers facing independent suppliers). However, Ofgem challenges the extent to which the financial crisis is responsible for this, given that the German markets have been unaffected.

Capacity margins

It has also been suggested that the widening capacity margins due to the fall in economic activity, and subsequent reduction in demand, may be dampening incentives to trade in the forward markets.[119] Because there are wide margins, suppliers can be more confident that they will be able to secure the physical delivery of electricity closer to the time when they need it.

The Carbon Price Floor

The Carbon Price Floor (CPF) is a new Treasury tax, introduced in the 2011 Budget and beginning in April 2013. The carbon price floor aims to give certainty on the price of carbon and of reducing emissions. This in turn is aimed at giving energy companies certainty that low-carbon methods of electricity generation, like nuclear and wind, will make better long-term investments than carbon-intensive methods like coal. The CPF is considered as more certain than the carbon price in the EU's Emissions Trading Scheme in the short term, because it is not subject to market variations. But some stakeholders see it as less certain in the longer term, because it is set entirely by the Treasury, and could be cancelled quickly under political pressure. So, due to the political nature of the CPF, with prices set only two years out, it is considered by some to be making market participants wary about wholesale electricity products for delivery in two years and beyond.

The impact of Enron's collapse

Prior to its collapse in 2001, Enron essentially functioned as a market maker for the wholesale electricity market. Market makers are often independent traders or trading firms that act as a guaranteed counterparty for buying and selling of financial products and commodities, creating trading activity.[118] In its market-maker function, Enron was the counterparty for 25% of trades. Consequently, Enron's collapse had a tremendous impact on the market as there was an immediate and significant reduction in the availability of trading counterparties.

A number of financial organisations left the wholesale electricity market at the time of Enron's collapse (because of the loss of the market maker) and they have not returned. This negative effect has had a particular impact on the ability of, for example, suppliers to buy forward contracts. It also led to credit terms being tightened up more generally, which in turn has reduced liquidity.

The markets are challenging for independent suppliers and generators

The six large vertically-integrated energy companies may have presence across the supply and wholesale markets but they are not the only participants in these markets. There are a number of independent suppliers, electricity generators and gas producers. Independent suppliers and generators face different challenges, but both suffer in the the current market place.

Independent suppliers

Independent suppliers face various problems in the retail,[120, 121] and wholesale markets.[122] In the wholesale energy markets, their lack of credit and collateral, or free cash to back collateral requirements, is often cited as impeding their ability to access a range of platforms to source the energy supplies they need. For example, they may have to focus or pool all their resources for the OTC market and they may not have the resources also to trade on exchanges.

Finding energy products that are of the right size (generally small), with the right profile is also an issue. Some suppliers have struggled to get a response from the large vertically-integrated companies if they approach them to buy energy, and if they do get a response it may not be on terms the independent suppliers, and Ofgem, consider reasonable.

An additional issue that may affect small suppliers is the cash-out regime.[123] This is the mechanism for ensuring that the gas and electricity systems are in balance. It works by charging the costs of imbalance (which might, for example, include buying extra energy at the last minute at high prices) to any company that is "out of balance". It affects small suppliers and generators because they have fewer options to maintain balance, and because there are potential large costs and therefore also a large risk to cover. The system is currently under review by Ofgem.

Independent generators

There are a range of issues facing independent generators. The change in relative cost of gas and coal and the impact that this has on margins, the introduction of the new carbon tax in the form of CPF and the uncertainty created by the introduction of the wider EMR programme are issues facing all generators, including the independents. Specific issues for independents are the continued lack of liquidity and the challenges in securing bankable Power Purchase Agreements that are at a reasonable price and fit with the generators' interests. As part of the EMR, The Department for Energy and Climate Change (DECC) is currently reviewing options to address the latter point for independent renewable generators. These include developing a green power day-ahead auction in the form of a pool for renewable energy.

An impact of the low levels of liquidity is that prices will not be as efficient

The low level of liquidity in the wholesale electricity market is undesirable. It hampers the entry and growth of independent companies and limits competition between incumbents. It raises serious questions about the ability of the market to keep prices efficient, as well as the viability of using price data from these markets to set or index prices paid by energy suppliers, including those of the six major suppliers.[124] And in markets with low levels of liquidity it is easier for the prices to be manipulated with a single or small number of trades.

4.2 A preference for uncleared OTC trading has resulted in a lack of data and the process for gathering data from this OTC trading vulnerable to manipulation

There is always a need for price information. It can be used for setting contract terms. It should be used for general market monitoring and to track movements in wholesale energy prices.[125] Quality data that could be used to demonstrate the link between wholesale and retail prices would help give consumers confidence in the prices they are charged. Wholesale price information can be used by prospective investors. And with the introduction of Contracts for Difference (CfD), as part of the EMR, robust wholesale electricity price information will be central to ensuring that consumers get a fair deal; reference price indices based on wholesale market price information will be used to determine the level of subsidy that consumers will pay.

Gas and electricity wholesale energy are dominated by uncleared OTC trading, now estimated to account for 80% of electricity[126] and 70% of gas trading.[127] There is a stronger preference for OTC electricity trading in GB than in other European markets.[128, 129]

In uncleared OTC the way the prices paid are revealed varies depending on the way the trade occurs. The prices may only be revealed to those directly involved in the specific bilateral trade; for traders and market participants using brokerage screens prices and volumes are presented on the screens, seen by the traders, until the trade occurs. In addition, uncleared OTC products are a mix of standardized and bespoke products. This creates two challenges in producing wholesale energy market-derived price information. First, there are no formalised routes through which the uncleared trading data is gathered. Second, the variety in bespoke products traded makes it difficult to directly compare prices. Exchange-based trading and cleared OTC trading are transparent ways to reveal prices and develop reference prices as the rules and mechanisms for establishing and publishing prices are formal and explicit. But because uncleared OTC is the primary form of trading, information is gathered from it and is the primary source of data for price indices.[130]

Price reporting companies such ICIS Heren and Argus compile wholesale price indices by calling around a selection of OTC brokers and traders, which may include the six large vertically-integrated energy companies, around the time the market closes to get the traders' take on the days OTC trading activity and the prices. The information gathered is then assessed, may be compared to any other data available, and is compiled into market indices for, for example, day-ahead or month-ahead prices. This information is then made available to subscribers.

Which? thinks this process for data collection is vulnerable to manipulation. In the 2001 Californian energy crisis the energy market was manipulated by a number of energy companies including Enron, and the biggest price reporters were thought to have played a role, unwitting or otherwise, as a result of the data collection processes.[131]

More recently, claims of a lack of integrity in the system came into focus in October 2012 with a number of allegations that the gas markets were being manipulated, which was similar to the manipulation of the Libor rate.[132] There has been a response by three gas brokers – ICAP, Marex Spectron and Tullet Prebon – who have since set up Tankard.[133] The Tankard index will use data from gas contracts traded through these brokers. This may address some issues with the process but it will not necessarily be representative of all the uncleared OTC gas trading market. There are currently no public plans to replicate this in the wholesale electricity market. However ICIS Heren has also responded. In February it launched a consultation seeking views on how best it should measure closing prices and whether there are alternative methodologies, amongst other questions. The difficulty that price reporters face is in ensuring that there is confidence in its price indices, given the vulnerability of the process to manipulation. As long as the prices relies on informal data gathered through processes that are vulnerable to manipulation, rather than transactional data, questions will be raised particularly when it is being used to justify price rises and set the price for government contracts.

The methodologies used by price reports also came under scrutiny from the European Commission and the International

Organisation of Securities Commissions in 2012.[134] This was followed by the European Commission launching an investigation in May 2013 into allegations of manipulation of the oil market involving BP, British Dutch Shell, Statoil and Platts – a price reporter agency. And in June 2013 Ofgem launched a call for evidence to gather views on how stakeholders use and contribute to price benchmarks, and whether they consider the current arrangements fit for purpose or if action is necessary (see Chapter 5).[135]

There are potential parallels with the Libor rate rigging scandal. As with Libor, energy price reporting is reliant on informal data gathering and on reporters' ability to discount reports that are unreliable for one reason or another. As the Wheatley review of Libor said, 'submissions were reliant on judgement, rather than transaction data'. As in the Libor assessment of bank lending rates, the administrative mechanism in energy price reporting provides an opportunity for contributors to attempt to manipulate submissions, as submissions are not always based on transactions and the process is self-policing.[136]

Furthermore, not all companies will supply information to price reporters. Centrica recently stated that they do not allow traders to provide information to price reports.[137] As Centrica is a major gas producer, this challenges how representative these price reports can be.

From conversations with traders, it is also clear that there is no consensus even within the trading community on how reliable such reference prices are. And as BDO found in a report for Ofgem (see 3.4.4), while the large vertically-integrated energy companies might use these as reference prices, they often adjust them to be what they deemed 'appropriate' before using them as the basis of transfer prices.

4.3 The absolute volumes openly traded appear low, so it is unlikely that this trading activity, or wholesale market price indices, can produce representative wholesale energy price information

Further to the lack of liquidity in the wholesale energy markets, allegations of manipulation, and the vulnerability in most data gathering; the volumes that are actually traded raise a further challenge to the reliability of wholesale energy price data.

The nature of uncleared OTC trading makes it impossible to know how much gas and electricity is traded in the wholesale energy markets. It is estimated that in 2010 the equivalent of just 10% of gas consumption and 6% of electricity consumption was traded OTC. This was considered low by some, but the nature of OTC in reality is that it is impossible to know.

An additional consideration is which market (or time frame) should be used to benchmark prices, trades or contracts.

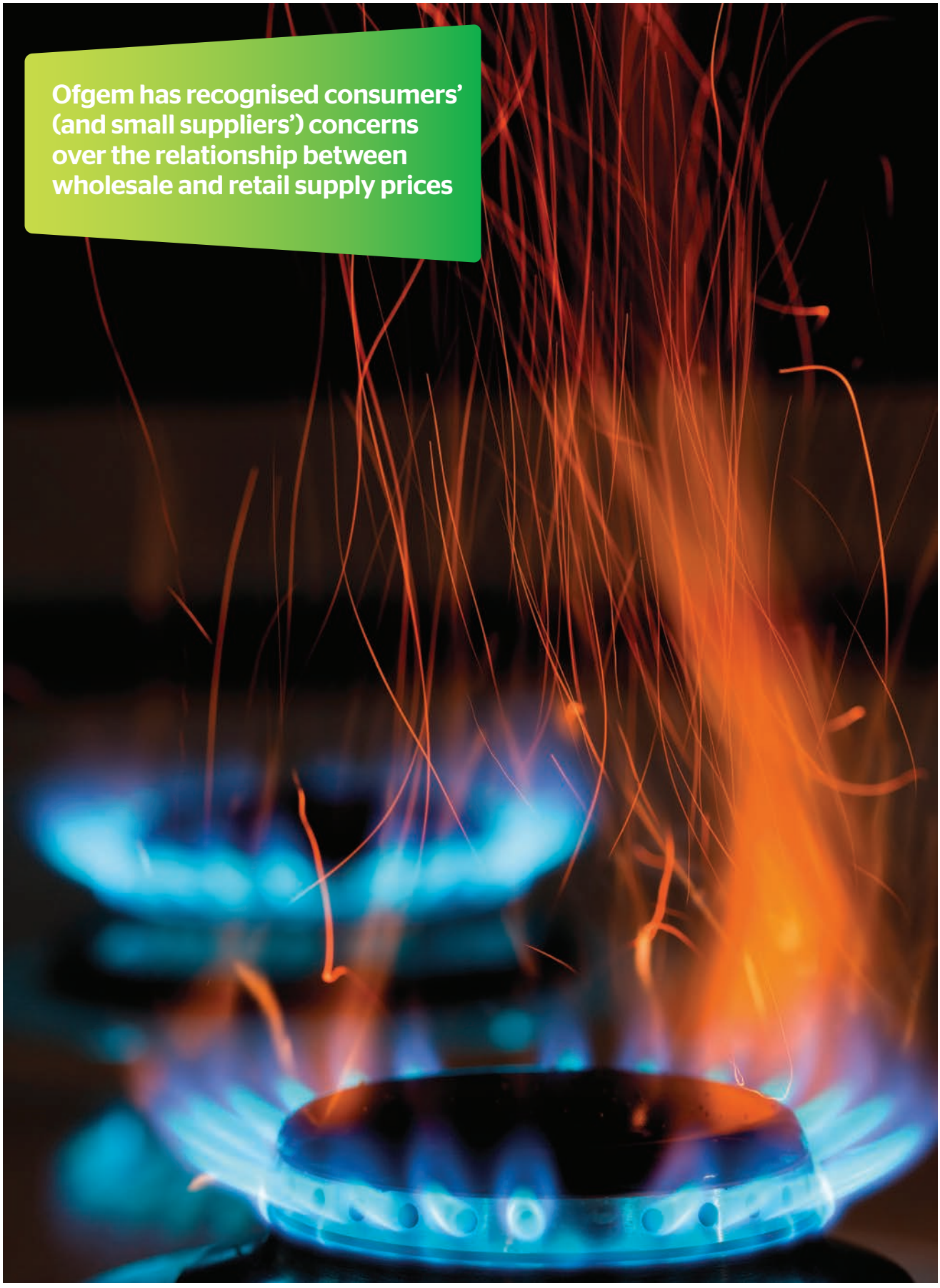
The day-ahead and month-ahead gas markets are used to index structured gas contracts.[138] However there is significant volatility in these markets – particularly in the month-ahead market.[139] This volatility is being driven by supply side shocks, such as the Japanese tsunami, rather than demand side pressures. The volatility often doesn't translate into real changes in price 'the volatility bears no relation to cost either average or marginal'[140], yet contracts are linked to these volatile markets and will influence consumers' prices. This does not seem appropriate. Further, the volatility increases the premium on derivatives bought to hedge against such fluctuation, and these increased costs are likely to be passed through to consumers.

As section 4.1 explains, there is low liquidity across most of the electricity market and as well as inhibiting efficient price formation, low liquidity can lead to volatility.[141] And there are contracts and trades set against indexes derived from these illiquid markets, the costs of which consumers will bear.

In summary, there are issues of low volumes being traded, liquidity and volatility. Raising questions of whether the wholesale gas or electricity prices data is of adequate quality and representative enough for the important role this data plays in:

- Energy contract negotiations and wholesale market trading
- Influencing transfer pricing for self-supplied energy
- Assessing the effectiveness of competition in the wholesale energy markets
- Tracking the relationship between wholesale energy costs and retail prices
- Enabling prospective investors to assess commercial opportunities.

All of which will feed through to consumers' energy prices today. Furthermore and fundamentally, through the EMR programme this wholesale electricity price information, which is gathered through processes vulnerable to manipulation, will be given a formal role. The information will be used to determine the variable level of subsidy that consumers will pay when the electricity contracted for is sold via the CfD. It may also be being used in strike price negotiations.


Ofgem has recognised consumers' (and small suppliers') concerns over the relationship between wholesale and retail supply prices

Interventions to date

5.1 Aiming to increase confidence in the market arrangements and the price consumers pay

Ofgem has recognised consumers' (and small suppliers') concerns over the relationship between wholesale and retail supply prices and the fact that the six large vertically-integrated energy companies function across both markets. In an attempt to address these concerns, Ofgem has initiated a number of programmes of action.

Electricity and Gas Supply Market Indicators

Ofgem publishes, now weekly, Electricity and Gas Supply Market Indicators.[142] These are speculative projections of net margins on 'typical' accounts, based on estimates of expected wholesale and operational costs, as well as assumed or estimated purchasing practices. However, the analysis suggests that the retail market simply follows wholesale markets, with the retail market putting little pressure on the level of wholesale energy costs. The Market Indicators have also been criticised by suppliers and their representatives as being a snap shot and as such not presenting the full picture.[143]

Consolidated segmental statements

The allocation of profits across the different businesses – generation, trading and supply – within the vertically-integrated companies should provide an understanding of the different businesses and relative performance of each of these. Ofgem introduced new financial reporting requirements – the consolidated segmental statements – for the large vertically-integrated energy companies to better understand this internal dynamic.[144]

However, the usefulness of this information is limited as it is merely a top-level assessment of where the margins and costs lie across the generation and supply businesses. As Ofgem's then Chief Executive Alistair Buchanan stated in recent evidence to the Energy and Climate Change Select Committee 'it is deeply confusing and difficult to get to the bottom of'.[145] The analysis does not differentiate trading segments, which have their own costs and margins. Nor does it provide information on the different business structures or the way the different companies will assign risks and margins to and between the different business segments. For example, some of the vertically-integrated companies have trading companies as well as optimisation functions[146] for their generation and supply businesses. Some of the other large vertically-integrated energy companies have tolling businesses that rent generating capacity from the generation businesses; some have raised questions of double counting of costs with such structures.[147]

As described above, the European nature of four of these companies provides additional opportunities to move margins and cost bases, not only within the company but also between the different national entities. Consequently the consolidated segmental statements may only present part of the picture.

Transfer pricing

Concerns about transfer pricing have been raised for many years. As part of the Retail Market Review, Ofgem commissioned the accountancy firm BDO to audit the process for the consolidated segmental statements and transfer pricing methodologies.[148] BDO found that different approaches were used by the companies so a direct comparison was not possible. BDO concluded that the processes were 'broadly fair' with no incentives to manipulate the process, but underlying this top level report was a more mixed picture.

As noted in Chapter 3, transfer prices are often but not always based on wholesale energy market price information and may be based on internal modelling or adjusted market index values. The BDO audit also found that the companies tended to self-supply for electricity to be delivered in three years or more, and, in their response to the BDO report, Ofgem questioned how much confidence could be had in transfer prices that were set this far out.

In conclusion, while the processes used may reflect normal business practice, there is no evidence that internally transferred energy is done at the best cost to the supply division or to consumers. It is impossible to determine the fairness, or even the level, of the price offered to the supply businesses within these vertically-integrated companies. The audit raises serious questions about the potential detriment faced by consumers in the form of inefficient energy prices from the large vertically-integrated energy companies self-supplying so far along the time curve.

5.2 Aiming to increase competition in the wholesale electricity markets

Domestic activity

Ofgem – Wholesale power market liquidity, a strand of the Retail Market Review

In 2008 Ofgem voiced concerns that independent suppliers were unable to gain a foothold in the retail market because the underlying wholesale electricity market did not meet their needs.[149] As part of the Retail Market Review, Ofgem began exploring the level of liquidity in the wholesale power markets and the impact of this on independent suppliers. In response to Ofgem's initial considerations that the large vertically-integrated energy companies should be required to sell a proportion of their volume in a designated market[150] a number of the vertically-integrated companies announced their intention to increase trading on N2EX's day-ahead electricity auction. They have all now committed to do this and have entered into gross bidding agreements with N2EX and, as Chapter 4 sets out, there has been an increase in trading on N2EX.

In the intervening period Ofgem has considered a number of options for reform including locking in the commitment of the large vertically-integrated suppliers to trade in the day ahead market. In June Ofgem published it's final proposals[151] which have three strands.

- First, Supplier Market Access Rules – obligations on the eight largest generators to offer reasonable terms to small suppliers.
- Second, Market Making Obligation – an obligation on the six large vertically-integrated energy companies to post bid and offer prices for a range of products and volumes.
- Third, Reporting Requirements – on-going monitoring of activity in the near term (day-ahead) electricity markets by Ofgem.

Which? supports the first strand – the Supplier Market Access Rule. Reasonable terms should support the entry and growth of a range of suppliers. However Which? does not support the Market Making Obligation – the second strand. With this proposal Ofgem is attempting to remedy two issues with a single proposal the lack of total volumes of electricity available for trading; and low levels of trading of certain products and volumes. While we agree that both issues need to be addressed and Which? is sympathetic to the idea of a market maker, by placing this obligation on the six large vertically-integrated energy companies, the role of these companies becomes even further embedded in the GB energy markets. Furthermore, there will be costs to meeting this obligation and, as there will be no change to the underlying company structures, there is no reason to believe there will be any incentive to incur these costs efficiently and so mitigate the impact on customers' bills. In the consultation, Ofgem has set out that it would support an alternative approach to market making but it is not clear how this would come about and be successful without Ofgem driving it, as even if an exchange platform developed a market maker, there is no guarantee that the volumes would be available to trade. Finally, the bid and offer prices that these companies are to post will not be prices produced as a result of price discovery through trading. As a result it is not clear what the incentive will be on these companies to offer efficient prices.

The final strand – the reporting requirements – are positive as they demonstrate that Ofgem has recognised the need for on-going monitoring and the importance of the near term (day-ahead) markets will play with the implementation of the EMR. However this strand does not include any proposals to improve the quantity or quality of price information available. And there is no mention of the importance of reference price for prices further out, which will also be important to the EMR's success.

Ofgem's Secure and Promote proposals may be effective for meeting some of the needs of independent suppliers. However Which? considers that the focus and objectives of this programme have been too narrow. For example it has not considered the impact of vertical integration more widely. We fail to see how these proposals will create a balanced and open market and put in place the right incentives needed for effective competition.

DECC – The Energy Bill

DECC has put backstop powers in the Energy Bill to 'promote greater liquidity' in the wholesale electricity markets to encourage more effective competition in these markets. DECC has stated that this is to support Ofgem's work in this area.[152] However, Ofgem's focus is on helping small, independent suppliers establish and grow, while DECC's objective is to ensure that the wholesale electricity market is working effectively to encourage generators and investors with the necessary balance sheets to invest in low-carbon generation.

DECC has estimated that the cost of renewal and decarbonisation of the electricity sector will be £110 billion, paid for from consumers' bills. It is clear that this investment will not come from the six large vertically-integrated energy companies alone, so DECC needs to be confident that the underlying wholesale electricity markets can attract and support investment from other parties in order to encourage investment. Further, the electricity markets will need to provide robust wholesale electricity price information that will form benchmarks for the government's EMR Contracts for Difference.

European activity

In parallel to domestic developments, the European Commission continues to push forward proposals for a single European electricity market – the European Target Model.

The European Commission aims to ensure competitively priced energy by creating an integrated electricity market with harmonised arrangements across all Member States. It will have a day-ahead market coupled through the GB hub. The GB hub will be virtual and will bring together trading on both of the day-ahead auctions (APX and N2EX) to set a single price. This GB hub price will determine interconnection capacity and prices, ultimately determining whether electricity generation in

GB will be exported. As the auctions are being brought together, this is expected to create a single pool of liquidity, which may make the day-ahead auctions more attractive for trading and so boost liquidity.[153]

By 2020 the level of British interconnection should have increased from 3.5GW to 8GW, allowing a transition to a more integrated market. This increased integration will both drive and require changes to the electricity markets, including increasing the liquidity on the power exchanges. However, even with the increase in interconnection, it is unlikely that the flows of energy through the GB hub will ever reach the levels that go through Germany because of the lack of physical interconnection. Consequently while this may improve the level of competition in the wholesale electricity market it is not a silver bullet.

5.3 Aiming to increase the transparency and integrity of wholesale markets

The development of the EMR programme has drawn government and Ofgem's attention to the lack of credible reference prices for wholesale electricity products. The European Commission views transparency of energy trading as a key avenue to ensuring the integrity of wholesale energy markets, as it should discourage manipulation and make it easier to spot when it does occur.

At a domestic level the lack of transparency and integrity in wholesale price information is recognised

There is recognition that wholesale price information is not as transparent or robust as it should be. Until June 2013 steps to address this in the electricity market were limited to improving the functioning of the wholesale market rather than the quality or quantity of reliable data from it. With regards to the wholesale gas markets, Ofgem and FCA investigations into the market manipulation are still under way.

In June 2013 Ofgem published a call for evidence about whether or not pricing benchmarks in both the gas and electricity markets were fit for purpose.[154] The consultation looks for views on the roles played by benchmarks in the markets and whether changes are needed. This is in parallel to the Ofgem liquidity and market monitoring proposals set out above.

There are three European programmes

There are three European programmes aimed at improving the transparency and integrity of the European energy markets:

- Regulation on Energy Market Integrity and Transparency (REMIT)
- Markets in Financial Instruments Directive II (Mifid II – a revision of an earlier version)
- European Market Infrastructure Regulation (EMIR)

REMIT is a market abuse regime for electricity and gas markets, prohibiting market manipulation and insider trading. It will also impose transparency obligations on all market participants and all trading across all platforms – but not structured contracts – that require wholesale energy market participants to provide energy market transactions data to ACER and to publish inside information. The exact scope of the 'transactions' is not yet finalised. However, if it is limited to the spot market as Ofgem has speculated, it will produce little if any further data.[155] This is because it will do little to improve the quantity or quality of information, as the quality of information for the spot market is already adequate.

In June 2013 the Government announced that REMIT would be transposed at the end of June, with Ofgem being given new powers of investigation and enforcement, and the power to penalise. The associated consultation[156] set out that Ofgem would be able to compel trading data as part of an investigation. There was no indication that Ofgem could or would use the power to make public on-going trading data to improve the quantity and quality of wholesale market data available.

A purpose of Mifid II was to introduce requirements on electronic trading and transaction reporting, defining which products and firms fall within European financial regulation. It is not clear to what extent trading activity by energy companies will be included in the scope of the directive. This is currently going through the Commission.

It is proposed that EMIR will be used to mop up whatever energy trading falls outside Mifid II and it is designed to fill any gaps left by REMIT and Mifid II. EMIR is expected to come into force in 2014. But the scope of EMIR will be determined by what is and isn't covered in MifiD II and REMIT and as these are going through trilogue in the Commission, it is as yet unclear what EMIR will cover.

Through the combination of programmes, there will eventually be routine collection of information of trading activity by ACER. However, it is still not clear what will be the granularity of this data, which markets it will reflect, and who will have access to it. These regulations should deliver greater transparency to enable ACER and Ofgem to better scutinise the markets. But based on conversations regarding these regulations, they will not publicly surface information from OTC trading, such as volumes and prices, that would enable other stakeholders to also scrutinise the markets. As a result, it is possible that it will deliver greater transparency to enable greater scrutiny of the markets by stakeholders.

Conclusions

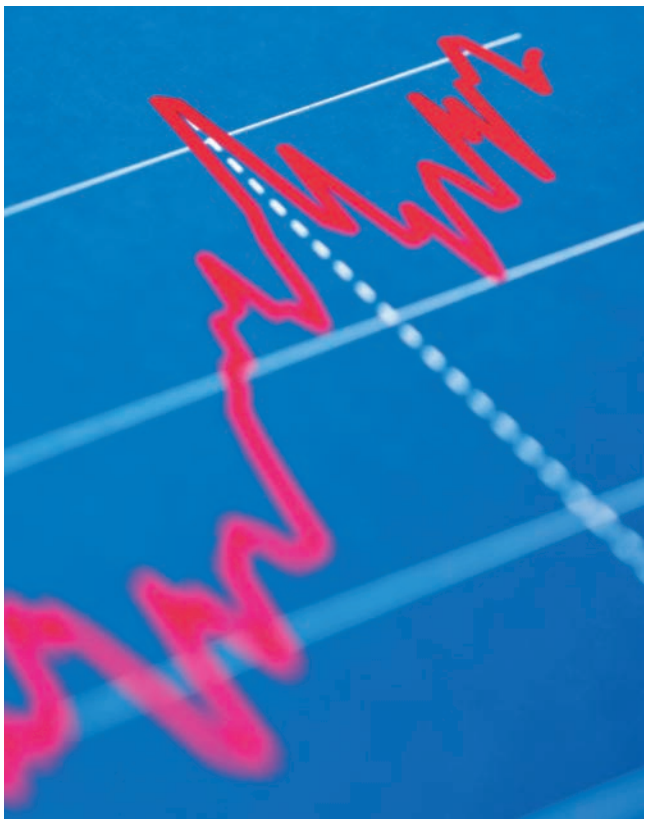
Having scrutinised the arrangements of the wholesale energy markets, Which? has no confidence that the prices it drives are fair now or will be in future. This is unacceptable.

The cost of energy is consistently one of consumers' top financial concerns.[157] Many consumers are now going into debt or dipping into their savings to make ends meet, and that includes covering everyday costs like their energy bills. Wholesale energy costs make up 60% of consumers' energy bills and, since liberalisation, it has been movements in wholesale costs that energy companies have cited as the main driver of price increases for consumers.

But consumers say they don't trust suppliers.[158] The main reason is because they think energy companies' profits are too high and that they consistently put profits before customers.[159]

Energy companies say that they want to rebuild consumers' trust. But they won't achieve this until consumers can be confident that the retail prices they pay, and the underlying wholesale costs and arrangements that drive them, are fair. Consumers also need to be reassured that the six large vertically-integrated energy companies, which have such a huge influence across the generation and supply of our energy, are working to serve their customers as well as their shareholders.

Consumers are baulking at the level of energy bills they face now. Their patience and confidence will be strained even further when they start to pick up the cost of the government's £110 billion investment in low-carbon energy generation in their bills. If the government is to win support for this essential investment, then it must ensure that the wholesale market structure is as competitive as possible, and can be seen to be competitive.



The existing wholesale market arrangements were established in good faith, with an expectation that they would drive effective competition that would deliver fair prices for consumers and bring much-needed investment into the market. However, as we saw in our review of the retail energy market, the current arrangements are working only for the big six vertically-integrated energy companies and not for consumers.

Conclusion 1

The system appears to serve the large six energy companies, not consumers

Six large vertically-integrated companies dominate the wholesale and retail energy markets in the UK. Between them, they supply more than 98% of domestic customers and have more than 70% of total generating capacity. The dominant power they have across these markets, and the way they exert this power, seems to ensure that they always win, regardless of whether wholesale energy prices go up or down.

These six companies may benefit from the efficiency of vertical integration themselves – through lower risks and shared costs. But there is no evidence that the benefit of this efficiency is shared with their existing or prospective customers in the form of lower prices. Indeed, it is the small, independent energy suppliers – who do not share the economies of scale or vertical integration – who have often offered more competitive prices.

Furthermore, transfer pricing (the process by which the companies sell energy from one part of the business to another) is opaque at best. The Ofgem-commissioned investigation by accountancy firm BDO into transfer pricing within the large vertically-integrated companies found a mixed picture. And Ofgem has questioned whether there could be confidence in transfer pricing charges to suppliers as many of the prices the supply businesses paid were benchmarked to markets that weren't competitive.

Vertical integration has potentially created the opportunity for companies to manipulate the markets through their market share, margins and prices

Vertically-integrated companies can move and split margins within and between their business segments, so that they can balance low margins in one segment with higher ones elsewhere and so deliver an overall positive financial performance at group level. They can do this at a national level or even, where relevant, at an international level. This process has been described as 'chasing margins up and down the value chain'. These practices raise questions about whether the companies are pushing profits into the generation parts of their business to make the retail market look less attractive to prospective entrants and to 'justify' the level of energy prices.

The result of companies managing margins in this way would be that prospective investors or new entrants to the market would not get a true picture of the likely returns and so could be deterred. Yet their involvement in the market is crucial for its long-term sustainability.

Compounded by the lack of demand side pressure, with limited numbers of consumers moving away, it makes sense for these companies to keep prices high. The evidence suggests that these vertically-integrated companies may make less profit overall if they reduce retail prices, even if they acquire more customers and sell more energy as a result. If they increase retail prices, it may result in losing a small number of customers and selling less energy but overall profits increase. And the most effective way to do so – to the benefit of overall company performance – is to increase the wholesale costs. Through this approach all consumers will pay this inflated price regardless of who their supplier is.

Vertical integration has skewed the market, penalised new entrants and impaired competition

Vertically-integrated companies are able to supply themselves with electricity and this type of self-supply is said to account for a significant share of wholesale electricity sales in the UK. Self-supplying reduces the amount of price information available for others to use as benchmarks or reference prices because the prices that the upstream electricity generation or gas production businesses charge their own supply businesses are not published.

It also reduces both the volume of energy available for sale to other suppliers and the amount of energy that suppliers need to buy on the open market from other generators.

The combined impact of these factors has raised concerns that the dominant position of the six major energy companies is having a detrimental impact on independent suppliers and generators – by limiting the availability of volumes, buyers and purchase agreements and so restricting the total amount of competitive activity in the market.

In conclusion, while this current market structure may be providing consumers with a reliable supply of energy, there is no evidence to suggest that it is also delivering costs that are efficient or fair. Indeed, what evidence is available suggests that the reverse is true.

Conclusion 2

It is impossible to be confident that activity in the wholesale energy market drives efficient or fair prices

If consumers are to be confident now and in the future that energy prices are fair, then there must be both clear evidence of effective competition in the wholesale energy market and robust wholesale price information to back that up. Currently, there is neither.

The wholesale electricity market has low levels of liquidity, so it is inherently vulnerable to manipulation and inefficient prices. The wholesale gas market is more liquid and has more players. The gas spot market is thought by industry commentators to have benefitted consumers for many years. But even this market is now being investigated after a whistle-blower alleged that the market was being manipulated. And the wholesale markets do not fully meet the needs of independent generators and independent suppliers, limiting the pressure that the companies can place on the large vertically-integrated energy companies.

Both the wholesale gas and electricity markets are dominated by OTC trading but there is no formal way to produce price data. Processes to gather price data have evolved around uncleared OTC trading but these are vulnerable to manipulation. Furthermore, the volumes of gas and electricity being traded are publicly estimated to be low relative to total consumption in the region of 10%. So this data is limited, may not be representative of all wholesale energy prices and is open to abuse. Yet this data is already being used by government to set long-term contracts to subsidise the production of low-carbon energy in decades to come, and the role of this inadequate data will be formalised as part of this contract-setting process.

As a result, we have little confidence that the prices being paid in the wholesale markets, or in any contracts associated with wholesale markets, are efficient. This has serious implications for the prices consumers pay for energy today and, looking ahead, it is difficult to see how consumers will not end up paying more than necessary to generators through CfD.

This is an opaque market with huge information gaps which undermine confidence and robust monitoring

Conclusion 3

There is a fundamental lack of transparency and availability of robust data regarding wholesale energy costs

There is a fundamental lack of robust data to demonstrate a competitive relationship between wholesale costs and retail prices.

First, within the context of trading activity and market volumes: the dominance of uncleared OTC means that there are unknown volumes of energy being sold for unknown prices which may or may not be benchmarked against unknown references. This extends to the longer-term contracts, the volumes and price structures of which are unknown, and the ability of the vertically-integrated companies to self-supply through internal markets means that there will be unknown volumes of energy being traded internally for unknown prices. All of which leads to wholesale price indices using unreliable data collection methods and drawing on limited trading.

Second, the large vertically-integrated energy companies make claims of low retail margins but they are impossible to verify, as margins can be moved around business divisions nationally and internationally. There is also no clarity on where the costs of trading or tolling businesses are recognised in the accounts.

The end result is an opaque market place with huge information gaps which undermine confidence and robust monitoring.

Conclusion 4

It is impossible to be confident that the relationship between wholesale energy costs and retail prices is fair or efficient

To summarise there is a lack of credible, wholesale price data, the nature of the vertically integrated companies' self-supply is opaque and there is a situation where it seems that the six large, vertically-integrated energy companies can win and consumers can lose regardless of whether wholesale energy costs go up or down. All of this undermines any confidence that consumers are benefiting from competition across these markets. It is not fair to expect consumers to foot the £110 billion bill to support the necessary investment in the energy system, when it is impossible for them to have confidence that the energy system is serving their interests either now or in the future.

Recommendations

Reform is required to unlock and drive effective wholesale energy prices

There is broad agreement that effective competition in the wholesale energy markets could be the bedrock of efficient energy prices for all consumers, and would provide timely investment signals for investment and confidence to a range of stakeholders. There is also recognition that steps must be taken to improve the current arrangements and, as Chapter 5 explains a series of reforms are currently being attempted. However, despite the fact that all players accept that something needs to change, there is little consensus on what reforms are required or would be most effective. The government must commit to an independent review to dig into what is happening and then determine what actions are needed to drive open and intense competition.

There are multiple issues and there is no single solution; rather a package of measures is required. Which? considers that the package of reforms set out here will provide the foundation for open and competitive markets that should drive efficient energy prices for all consumers, as well as giving all stakeholders confidence in the arrangements – whether they are prospective investors in new generation, small suppliers looking to grow, large vertically-integrated energy companies keen to maintain the high level hedge of owning both generation and supply business, or consumers wanting reassurance that the energy markets are not stacked against them. This will be key to supporting the necessary investment to renew and decarbonise the energy system, which will require investment from a range of companies and will ultimately be paid for by consumers.

We recognise that, while a market may be in place, this does not guarantee effective competition and efficient prices in practice. Our recommendations reflect this, setting out robust monitoring proposals as well as further options to improve liquidity.

Finally, having been party to many conversations with a range of stakeholders where there was little if any consensus on the necessary steps to improve the market arrangements, we recognise that it is likely that there may be objections to these ideas. Box 5 addresses the objections we have already heard.

Recommendation 1

Ring-fence supply businesses from generation businesses in vertically-integrated companies by requiring a distinct license holder for each business

Which? considers that a natural skewing of incentives exists within the current vertical integration arrangements – reducing the effectiveness of the market to the detriment of consumers. Evidence set out in this report suggests that structures that put supply and generation or production businesses under a single management and governance structure, may impede competition, and so increase the prices consumers pay.

Ring-fencing supply businesses and so increasing their separation from upstream businesses should counter the natural conflict of interests within these large vertically-integrated energy companies.

This is an approach that has already been taken with transmission and network companies to address the skewing of incentives. It is also in line with the spirit of the European 3rd Energy Package objective of the unbundling of businesses throughout the energy value chain.

Ring-fencing the supply businesses from generation should provide the opportunity to unlock competition and improve transparency in the wholesale energy markets.

First, this should ensure that the interests of the supply business are better aligned with those of its customers by enabling supply businesses to seek out the best possible prices for their customers. Ultimately, this should help improve consumers' trust both in the price they pay and the underlying

market. It should increase volumes of energy being traded on the open market, and support a greater range of participants and their interest in the markets and the prices being offered. This in turn should improve the quality and quantity of price information that can be transferred into more robust price indices.

This proposal can be achieved by implementing the same type of licensing regime that currently exists for co-ownership of network and transmission businesses and energy generation and retail, whereby:

- The licence holder of a supply business cannot be a licence holder of a generation and production business.
- The licences would prohibit the sharing of information or governance.
- All contracts should be externally brokered.

As with network companies, co-ownership should still be allowed and this in turn should still provide these companies with the high-level commercial hedge of owning businesses throughout the value chain. As with the ownership of network companies, a series of rules would be needed to sit around this structure to ensure that the ring-fencing is not over-ridden.

Box 5 Answering objections to this package of recommendations

Ringfencing will be expensive to implement

There will be a cost to implementing the ring-fencing reform. The level of this cost is not clear. We have heard quotes ranging from millions of pounds from the large energy companies to a few hundred thousand pounds from banks. However it is clear that there is a significant cost to continuing with company structures that impede effective competition resulting in markets that fail to provide timely investment signals, are open to allegations of manipulation and that undermine consumer confidence in the prices they pay and the underlying markets. Crucially, these company structures also appear to go against the interests of consumers. Which? considers it unacceptable to continue with this situation when it is possible to put in place a stronger foundation for effective competition and drive better incentives for these companies to serve their customers as well as their shareholders.

The concerns could be addressed through better use of the Prohibition of Discrimination licence condition[160], or through a partial or full self-supply restriction

While the original reasons for lifting the self-supply restriction (SSR) in 2003 are no longer valid – that the supply and wholesale market competition are sufficiently developed – the reintroduction of an SSR as described below or the use of the non-discrimination clauses alone are not sufficient to address the problems set out in this report.

SSRs would provide volumes for trading or at least traded volumes equivalent to generation output, depending upon how the SSR was established. A number of companies already claim to sell, if not all, then a large part of their volumes. An SSR alone would not offer transparency and could potentially create an artificial market.

The prohibition of discrimination licence condition, when enacted by the Secretary of State, prohibits the licence holder from offering 'materially different' terms when selling electricity. However there is no definition of 'materially different' and it is not clear how compliance with this licence condition would be achieved. Further, it is not clear what the difference is between implementing this licence condition and Ofgem's Secure and Promote proposal to require the large vertically-integrated energy companies to offer reasonable terms.

What's more, an SSR or the discrimination licence condition in isolation or in combination would not address the concerns about the conflict of interest between the vertically-integrated energy companies' profits and consumers' prices.

Finally, and importantly, both SSRs and the prohibition of discriminatory licence conditions create difficult monitoring and enforcement regimes that our proposals, which are cleaner with less room for ambiguity, do not need.

"We sell several times our generation volume onto the market"

We recognise that many of the large vertically-integrated companies may sell several times their generation output onto the markets. However this does not necessarily equate to all their volume. What's more, because of the current preference for uncleared OTC, this trading does not provide the level of robust transparency that our proposals would deliver. The large vertically-integrated companies may be driving efficient energy prices, but it is impossible for anyone standing outside the companies to be confident that this is the case. Finally, there remains a management and governance structure in these vertically-integrated companies that appears to create a perverse incentive not to offer the lowest prices to consumers.

A pool is an alternative

A pool has many merits, however at this stage we do not consider there to be a need to introduce one. While the pool would create transparency for the energy traded within it, it would not necessarily improve transparency or liquidity beyond that, ie in the forward markets for hedging products. A pool of sorts is likely to naturally occur with the development of the day-ahead auction supporting the single European market.

Surfacing OTC trading data and increasing exchange trading will raise costs

We recognise that there will be on-going costs as a result of surfacing OTC data and increasing exchange based trading. However it is not possible to determine whether these proposals will increase costs as it is not possible to determine what the costs are now and whether they are efficient. An increase in on-going costs assumes that there will be no response by exchange platforms to reduce fees in response to increased volumes and trading activity. Further, more effective competition, delivering more efficient prices should also offset the costs of participating in the markets, whether these costs increase or not.

It is not necessary as the European regulations will address this

What level of transparency and market data the European regulations will surface is not clear and it will be some time until there is a better understanding of their full impact. However from the available information it appears unlikely that these regulations alone will be sufficient. They will not necessarily bring robust transparency across all the wholesale markets – they will not guarantee that better quality and a greater quantity of data become publicly available; it is not clear if they will drive increased volumes or liquidity into the markets and they will not address the conflict that appears to exist between the profits of the vertically-integrated energy companies and consumer prices.

What if the markets remain uncompetitive even after these reforms?

The improved transparency should better indicate what, if any, further issues are impeding effective competition and liquid markets. This should enable a more effective discussion of the steps necessary, such as consideration of market makers, as our recommendations set out.

This package will not solve all the issues

We recognise, as set out above, that putting in place a strong foundation may not be sufficient to address all the issues. Recommendation 2 proposes that Ofgem works with the exchanges to review the merits of market makers. But improved transparency and monitoring will enable Ofgem to evaluate better if and when any further reform is required. Improved transparency and more open markets should also highlight commercial opportunities to potential market markers.

It may be impossible to improve liquidity

It may be impossible to fundamentally improve the liquidity of the wholesale electricity market, due to the geographical nature of the GB wholesale electricity markets and the level of connection with other markets or because there is little or no need to trade 3 years out and beyond. This may be so, but until there is a strong foundation in place with more robust transparency, it will be difficult, if not impossible, to confidently ascertain that it is the geography of the market that ultimately impedes liquidity or that participants already have access to the products and volumes they need to hedge.

This will create uncertainty and that will affect investment

The proposals set out should create more transparent and competitive wholesale markets, which are important to bring on investment and ensure that the EMR will deliver value for money for consumers.

What level of transparency and market data the European regulations will surface is not clear and it will be some time until there is a better understanding of their full impact. However, from the available information, it appears unlikely that these regulations alone will be sufficient.

Recommendation 2
Improve the quantity and quality of wholesale price data

Better quality and quantities of publicly available wholesale market information is required. Until there is a greater degree of transparency underpinned with better quality information, it will not be possible to assess the level of competition in wholesale markets, evaluate the efficiency of retail prices and design the most effective interventions.

It is critical that the poor quality of information is addressed promptly. It is vital to give consumers confidence in the prices they are paying today. But better quality price information will also play a crucial role in ensuring consumers do not pay more than needed for low carbon investment subsidies with the introduction of Contracts for Difference which will be based on wholesale reference prices.

There is no single action that will instantly bring transparency and confidence where previously there was none, but we consider increasing the volumes available for trading to be a fundamental building block for this. Building on Recommendation 1, set out below is a three part Recommendation to 1) bring integrity and transparency to uncleared over the counter (OTC) trading; 2) increase volumes of exchange trading; and 3) to address liquidity issues further up the curve.

1) Formalise uncleared OTC trading

The majority of wholesale energy trading is uncleared OTC trading and this trading plays an important role in the market providing bespoke products and reducing the barrier to trading through lower collateral costs. Steps should be made to formalise and surface publicly the data from this trading activity. Through this, all the volumes and prices across the various OTC trading platforms would be made publicly available and could be used for market monitoring and to compile reliable price indices.

This could be achieved by requiring all participants in uncleared OTC gas and electricity trading to allow the OTC brokerages and platforms to publish anonymised details of all the transactions. The new EMIR European regulation might also be used to deliver this, though it would require the regulations to cover all wholesale energy trading and for ACER, the European super regulator, to make the volume and price information publicly available in a timely fashion.

Bringing greater transparency to the uncleared OTC market would provide data for on-going negotiations and, for example, for the compilation of price indices that all stakeholders can have confidence in. This again is consistent with the thrust of the European programmes which aim to improve the integrity of the wholesale energy markets.

2) Increase the volumes of trading across exchanges

A greater proportion of exchange-based trading is common to many other European countries. An increase in Britain would improve the quality of energy trading information as there are no questions of integrity with exchange-based trading. Equally, increased trading across exchanges should counter any concerns over difficult contract negotiations for the large vertically-integrated energy companies, which was originally a driver of vertical-integration.

This could be achieved through reforms to the license conditions of generators and suppliers.

3) Ofgem should work with exchange platforms to review the case for exchange based market markers to improve liquidity across the wholesale electricity market

Low liquidity has serious implications for energy prices today and in the future. It is a barrier to market access, and liquidity in the markets will be important to prevent price manipulation.

Therefore, an important aspect of improving the quality of the data is to ensure that there is enough underlying trading to produce the most efficient prices.

There is no single reason why the wholesale electricity markets are not more liquid. A combination of interventions is required to tip the balance, and greater legal separation of suppliers and increasing levels of exchange trading should help. We recognise that further intervention may be required and Which? considers the formalised introduction of a market maker to merit serious consideration. This should not be an obligation on vertically-integrated energy companies as is currently proposed by Ofgem[161] but an arrangement between, for example, a bank and an exchange. Working with the exchanges and, if necessary, with the Financial Conduct Authority, Ofgem should review the case for a market maker within the platforms and determine where it is most important for the markets to be liquid and what steps would be required to introduce one.

Recommendation 3

Ofgem and government should review and develop quality control criteria for wholesale market price indices

Robust wholesale energy price information should underpin efficient wholesale markets, providing confidence in energy prices today and in the future. However, the wholesale price information currently available lacks integrity on three counts. First, there are low levels of liquidity in the electricity markets, leaving prices vulnerable to excessive movement from a small amount of trading and resulting in allegations of market manipulation. Second, there is a lack of formal and robust data gathering. Third, the volumes of gas and electricity actually traded openly are small, representing a small proportion of the volumes being consumed. Despite the weaknesses in this data, it is still used and will have a formal role in the Electricity Market Reform as the source of price references. This appears to have finally been recognised by Ofgem which has now asked for evidence as to whether price indices are 'fit for purpose'. Ofgem also cites the importance of robust day-ahead price indices, though the importance of price indices further out appears to have been neglected.[162]

Implementation of recommendations 1 and 2 will improve the quantity and quality of wholesale energy price data. Working from this, Ofgem and government should develop a set of minimum standards for wholesale price indices based on robust and accurate data to provide confidence that a minimum standard of robustness and representativeness is met.

Recommendation 4

Comprehensive and effective monitoring of the wholesale energy markets and of the relationship between wholesale costs and retail prices

There has been little effective monitoring by Ofgem of the wholesale energy markets, the impact of vertical integration and the relationship between wholesale costs and retail prices. The proposals set out here will improve the quality and quantity of information available. Ofgem should have access to this information and the power to use it to monitor market activity and intervene if it considers it necessary to do so.

Ofgem should also ensure that data is brought together from the different wholesale energy markets, both the exchanges and from OTC trading, to enable greater independent scrutiny.

Building on this and Ofgem's recognition of a need to monitor the day-ahead markets,[163] Ofgem must introduce new, more comprehensive monitoring criteria to enable a robust assessment of the wholesale and supply markets. This should include:

- Generation: volumes generated; volumes sold internally and externally
- Wholesale energy trading: volumes traded on platforms; volumes and numbers of different power products traded; churn ratios and bid-offer spreads; volumes of financial versus physical products being traded
- Wholesale – retail link: analysis of the movement of standard domestic tariffs (gas and electricity) against wholesale market movements; analysis of wholesale prices, generation margin, number of domestic customers, volumes of energy sold via domestic retail market, margins from retail supply arm and group profits.

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[3] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition,* June 2013

[4] DECC, *Digest of UK Energy Statistics,* July 2012: consumers use 111.6 TWh this is 30% of total electricity generation (368 TWh in 2011) and consumers used 292,971 GWh (rounded to 293 TWh) this is 32% of total gas supply (904,741 GWh, 2011). To provide some context, the average household uses 3,300 KWh of electricity a year and 16,500 KWh of gas a year, and a TWh is 1,000,000,000 KWhs

[5] BDO LLP, *Ofgem Segmental Statements Review,* BDO LLP- Final Report, January 2012.

[6] Gas: Patrick Heather, 'Continental European Gas Hubs: Are they fit for purpose?', working paper at the Oxford Institute for Energy Studies, June 2012, p 62. Electricity: For example, EDF Energy offer power purchase agreements that are index linked, see www.edfenergy.com/products-services/large-business/large-business-products/export-lowcarbon.Shtml

[7] These are contracts set up directly between two parties, without a broker. Structured contracts are used for gas and power purchase agreements are used in electricity

[8] The commodity can be oil, coal, gas or biomass and the commodity cost is the main driver of the underlying wholesale energy cost. With the effectiveness of the commodity and wholesale energy markets playing crucial roles in ensuring that the commodity costs and wholesale energy costs are kept efficient. For example, the increase in gas prices has driven much of the increase in retail prices, the effectiveness of the gas markets and the wholesale electricity markets are important in ensuring that the gas prices are efficient. Within the electricity wholesale market the marginal fuel will also play a key role in determining the level of the wholesale energy cost.

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[12] Based on DECC, Chart 2.1.2, *Quarterly Energy Prices,* June 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/208286/qep_june_2013.pdf

[13] Populus conducted telephone interviews with 2009 GB adults and 201 adults in Northern Ireland between 24 November and 2 December 2012. Data were weighted to be demographically representative of all UK adults. Populus is a member of the British Polling Council and abides by its rules.

[14] Of Populus above, just 28% of consumers trust energy companies to act in their best interests, 56% saying that they do not trust energy companies to provide a fair price.

[15] Of Populus above, 46% Of those who don't trust their gas and electricity companies to act in their customers best interests, the top most common responses was 'greedy / too much profit' (46%)

[16] DECC estimate that £110 billion of investment is needed to replace current generating capacity and upgrade the grid by 2020, and to cope with a rising demand for electricity, www.decc.gov.uk/en/content/cms/legislation/energybill2012/energybill2012.aspx

[17] Ofgem, *Liquidity Proposals for the GB wholesale electricity market,* February 2010; DECC Energy Bill Series www.gov.uk/government/organisations/department-of-energy-climate-change/series/energybill; DECC: "We need to reform the UK [wholesale] electricity marketto attract the investment needed to replace our ageing energyinfrastructure and meet the projected future increases in electricity demand...", accessed online at www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-marketreform

[18] Low margins in retail and generation – particular the low spark spread (margins from gas powered electricity plants) have been speculated to be limiting the interest of new entrants.

[19] The Electricity Market Reform (EMR) is the Government's primary policy programme to bring on investment in low carbon generating capacity. There are four pillars to the programme: Feed in Tariffs with a Contract for Difference; Carbon Price Support; Capacity Mechanism and Emissions Performance Standard. The EMR is discussed in detail in our accompanying report Which?, *The Imbalance of Power: The Challenge of Decarbonisation,* July 2013.

[20] www.gov.uk/government/uploads/system/uploads/attachment_data/file/197633/liquidity_measures_ia.pdf

[21] The nature of gas and electricity and the physical nature of the energy system require the system to be balanced. There are penalties for suppliers who have too much or too little energy in the system with respect to their demand.

[22] Clearing involves the management of post-trading, pre-settlement credit exposures, to ensure that trades are settled in accordance with market rules, even if a buyer or seller should become insolvent prior to settlement. When trading occurs over an exchange this risk is borne by the trading platform. As OTC is primarily uncleared, the risks sit with the two parties who are trading. However some OTC trades are cleared, this can occur either via a clearing house or through an exchange. The clearing process requires access to all the key pieces of information, for example price, product size etc. This can then be used to produce price information.

[23] National Balancing Point- is a virtual trading location for the sale and purchase and exchange of UK natural gas. It is the pricing and delivery point for the ICE –ENDEX (IntercontinentalExchange) natural gas futures contract.

[24] APX - provides APX Power UK a platform for auctions, a spot market and prompt for base and peak load power (http://www.apxgroup.com/). It also provides clearing services.

[25] N2EX provides both physical and financial trading, it provides spot, prompt and auction platforms. The physical market is jointly operated by Nord Pool Spot and run by NASDAQ QMX Commodities, and the futures market is operated by NASDAQ QMX Commodities. It also provides financial trading and clearing services.

[26] Electricity: Ofgem, *GB wholesale electricity market liquidity: summer2011 assessment,* figure 4. Gas: Patrick Heather, 'Continental European Gas Hubs: Are they fit for purpose?', working paper at the Oxford Institute for Energy Studies, June 2012, p 2.

[27] Ofgem, *GB wholesale electricity market liquidity: summer 2011 assessment,* June 2011, p 12; Patrick Heather, 'The Evolution and Functioning of the Traded Gas Market in Britain', working paper for the Oxford Institute of Energy Studies, August 2010, p 35.

[28] Ofgem's assessment in Summer 2011 combined all exchange with cleared OTC, which combined equated to approximately 10% of trading. Ofgem, *GB wholesale electricity market liquidity: summer 2011 assessment,* June 2011, figure 4.

[29] Ofgem, *Liquidity Proposals for the GB wholesale electricity market:* February 2010 p22 Nordpool: www.nordpoolspot.com/Global/Download%20Center/Elbas/Market-makers-Elbas.pdf; Para 5.2,

[30] Dominic Maclaine, 'Electricity Generation and Wholesale Markets', in Ian Rutledge and Philip Wright (eds.), *UK Energy Policy and the End of Market Fundamentalism* (Oxford: Oxford University Press, 2010), p 207.

[31] Source N2EX data reports www.n2ex.com/digitalAssets/83/83462_n2ex_weekly_totals_2012.pdf

[32] Ofgem, *Wholesale power market liquidity: final proposals for a "Secure and Promote' licence condition,* June 2013, Appendix 3

[33] Ofgem, *Wholesale power market liquidity: consultation on a "Secure and Promote' licence condition,* December 2012, para 1.16. Trading in financial products has increased but it remains low and volatile.

[34] Ofgem, *Wholesale power market liquidity: final proposals for a "Secure and Promote' licence condition,* June 2013, Appendix 3

[35] This is the best estimate from a range of sources, no definitive data is available. "About half of Europe's gas supply comes from long-term contracts, mostly from Gazprom and Statoil" www.risk.net/energyrisk/feature/2196409/european-gas ; "Longer-term bilateral contracts between producers and other wholesale market participants account for the vast majority of gas traded in Continental Europe" www.olf.com/software/energy-commodities/articles/world-power-putting-trading-onthe-right-track.pdf ; "About 40% of European gas supplies are delivered under "traditional" long term contracts with the national gas companies of Russia and Algeria – Gazprom and Sonatrach – whose consent is necessary if any significant progress is to be made in loosening the ties of the existing contracts." www.moffattasssociates.com/energy_services/forecasting_market_trends/energy_viewpoints/documents/7/how_long_can_lonf_term_gas_contracts_survive.pdf

[36] It was not possible to determine what volumes of total electricity are bought and sold via PPAs. The only information available is the DECC estimate that 88% of electricity from independent renewable generators is sold via PPAs. DECC, A call for evidence on barriers to securing long-term contracts for independent renewable generation investment, July 2012

[37] OTC and cleared OTC gas traded volumes:: London Energy Brokers' Association December 2011, December 2012 and April 2013 volumes data sheets.

[38] OCM traded gas volumes were derived from APX-ENDEX 2011 volumes and 2012 volumes press releases. ICE-ENDEX provided volumes to date in 2013.

[39] OTC and cleared OTC electricity traded volumes: London Energy Brokers' Association December 2011, December 2012 and April 2013 volumes data sheets.

[40] Exchange electricity traded volumes: APX volumes were derived from APX-ENDEX 2011 volumes and 2012 volumes press releases. APX provided volumes to date in 2013. N2EX volumes were derived from N2EX data reports from 03.01.2012, 03.01.2013 and 10.06.2013.

[41] Electricity generation by fuel: gas (40%), coal (30%, nuclear (19%), renewables (9.4%), other fuels (2.5%). DECC, *Digest of UK Energy Statistics,* July 2012, chart 5.2.

[42] Ofgem, *Liquidity in the GB wholesale energy markets:* June 2009 p46

[43] SSE, BG, E.ON, EDF Energy, ScottishPower and RWE Npower

[44] Ecotricity and Good Energy are also vertically integrated with renewable generation.

[45] Barry Gardiner, House of Commons Oral Evidence taken before the Energy and Climate Change Committee – Ofgem Annual Report and Accounts, *Ofgem Annual Report and Accounts - corrected evidence* – 26 February 2013, March 2013, p 15.

[46] Three of the six – Centrica (BG), E.ON UK and RWE npower – also have upstream gas production business arms. RWE Rea is the upstream gas and oil production part of the RWE group. However the relationship between RWE Rea and RWE npower and whether there is gas supplied across it is not clear. For Centrica and E.ON UK see Ian Rutledge, 'Energy Markets, Industry Structure, and Portfolio Power over Consumers' in Rutledge and Wright, *UK energy policy and the end of market fundamentalism,* figure 8.1. We have been told that the remaining three manage this risk through long-term structured contracts but we were unable to locate evidence of this.

[47] Ofgem, *Liquidity Proposals for the GB wholesale electricity market,* February 2010, para 1.17.

[48] Since the Utilities Act 2000 was enacted it has been illegal for a licence holder for a network business to also hold a licence for a supply or generation business, whereas the same company can have both generation and supply licenses. The rationale being that without this effective separation there is an inherent risk of discrimination against competitors, not only in the operation of the network (such as through access to the transmission and distribution grids) but also in the incentives for vertically integrated companies to invest adequately in their networks.

[49] Centrica plc owns British Gas, Centrica energy, Centrica storage and Direct Energy, operating in the UK and North America. These businesses are split across two divisions, with British Gas, Centrica Energy and Direct energy falling under one division, of which Sam Laidlaw is Chief Executive. Centrica storage is within a separate division. Each of these businesses carry out different functions. Division 1 (under Sam Laidlaw): British Gas: Residential energy supply, residential energy services, business energy supply and services; Direct Energy: Residential energy supply, business energy supply, residential and business services, Direct Energy Upstream & Trading; Centrica Energy: Upstream gas and oil, power generation, industrial and commercial, proprietary energy trading. Division 2: Centrica storage: A wholly owned subsidiary of Centrica, managed at arm's length from Centrica Energy and Centrica's downstream energy businesses. Centrica Storage's commercial team is separated from those parts of Centrica

that deal in gas supply, gas shipping, trading and storage procurement. Manages the Rough storage facility which stores gas on behalf of other companies, including other Centrica businesses. RWE npower is part of the RWE Group which operates across Europe. Within the RWE npower there is: Retail – npower; Power generation – RWE Generation; Npower cogen – cogneration division of RWE npower; Investment in new power stations; Renewable energy – RWE npower renewables, part of RWE Innogy (RWE Group Renewbales). SSE business is split across three segments. Networks: Electricity; Gas; and Telecoms – SSE Telecoms and Neos Networks. Connections: SSE Utility Solutions. Retail: SSE – energy supply; SSE – energy and homes services; SSE Contracting. Wholesale: Generation; Gas storage; Gas production. E.ON UK is part of the E.ON Group. Within E.ON UK there is: E.ON and Energy Solutions – supply; E.ON UK Generation business; E.ON Climate and Renewables; E.ON Gas Storage UK (EGS UK) – new UK subsidiary; E.ON Ruhrgas UK North Sea Limited; E.ON Engineering - the technology centre of E.ON Group; E.ON IT UK – part of E.ON IT Group. EDF Energy is part of EDF Group. EDF Energy is organised into three business units: Energy Sourcing and Customer Supply, the Nuclear New Build project and Nuclear Generation. E.ON UK is part of the E.ON Group. Within E.ON UK there is: E.ON and Energy Solutions – supply; E.ON UK Generation business; E.ON Climate and Renewables; E.ON Gas Storage UK (EGS UK) – new UK subsidiary; E.ON Ruhrgas UK North Sea Limited; E.ON Engineering - the technology centre of E.ON Group; E.ON IT UK – part of E.ON IT Group.

[50] Ofgem, *Energy Supply Probe – Initial Findings Report, 2008;* Business and Enterprise Select Committee, Energy prices, fuel poverty and Ofgem', *Eleventh Report of Session 2007-2008,* July 2008.

[51] Ofgem, *Retail Market Review: Intervention to enhance liquidity in the GB power market,* February 2012, para 4.10; analysis by New Power Consulting for Friends of the Earth estimated a market share of 72%, accessed online at www.foe.co.uk/resource/reports/dirty_half_dozen.pdf

[52] Ofgem, *Energy Supply Probe - Initial Findings Report,* October 2008, para 2.40.

[53] Dominic Maclaine,'Electricity Generation and Wholesale Markets'in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism,* p 207.

[54] See 3.1.1

[55] Philip Wright, 'Wholesale Gas Markets: Conductors for Insecurities of Supply' in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism,* p 166.

[56] Ofgem, *The Retail Market Review - Findings and Initial Proposals,* March 2011.

[57] Institute for Public Policy Research, *The True Cost of Energy,* April 2012, p 11.

[58] DECC, Energy Bill 2012 Impact Assessment: reducing barriers to securing long-term contracts for independent electricity generation investment, August 2012; House of Commons Public Bill Committee on the Energy Bill 2012-13, Associated Memorandum submitted by the Solar Trade Association (EN 24), January 2013.

[59] For example in the Consumer Engagement evidence session held by the Energy and Climate Change Select Committee in, September 2012, representatives from each of the major suppliers stated that the retail market was competitive. Phil Bentley from British Gas said the UK had "the lowest gas prices in Europe" and "We give choice, there's lots of switching". SSE stated that the GB energy supply market is competitive, and that this competition continues to be the most effective means of protecting consumers.

[60] Guy Johnson, Director of Regulation at RWE Npower, *Energy and Climate Change - Minutes of Evidence,* December 2010: "our domestic supply business was loss-making in 2009. We will make a net loss this year as well."; *Utility Week,* 'Stiff competition in domestic retail leads to supplier losses', 20th November 2012; Business and Enterprise Select Committee, 'Energy prices, fuel poverty and Ofgem', Eleventh Report of Session 2007-2008', July 2008: "The Chief Executive of Scottish and Southern Energy (SSE) told us: 'At present [...] supply is loss-making. If it was not for the fact that all of the six are vertically integrated, prices to customers would already be higher than they are now'", p 24.

[61] SSE said retail operated as a standalone business as it did for all other energy companies. "Cross-subsidising energy supply with profits from the wholesale business would create a barrier to entry into the market, to the detriment of healthy competition. We expect to make a profit margin of around 5% in energy supply over the medium term, which we believe to be fair and sustainable." Centrica: A spokesman for Centrica said the company's post-tax profit margins on the retail market had averaged 5% for the last five years and was currently the equivalent of £50 per customer. He said the wholesale margin needed to be higher given that it funded power stations and forward contracts for up to £50bn of new gas supplies. "We believe it is a fair margin." http://www.guardian.co.uk/business/2013/apr/12/big-six-energy-firms-accusedprofiteering

[62] As described in the Consolidated Segmental Statements for 2012 produced for Ofgem by Centrica, SSE, Scottish Power, E.ON UK, EDF Energy and RWE npower www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/Reporting%202011%20Results%20Overview%20text.pdf

[63] Business and Enterprise Select Committee, 'Energy prices, fuel poverty and Ofgem', Eleventh Report of Session 2007-2008', July 2008.

[64] Populus conducted telephone interviews with 2009 GB adults and 201 adults in Northern Ireland between 24 November and 2 December 2012. Data were weighted to be demographically representative of all UK adults. Populus is a member of the British Polling Council and abides by its rules.

[65] *The Independent,* 'British Gas hikes prices as Centrica profit soars', 16th November 2012; BBC News website, 'SSE sees half-year profits rise 38.3%', 14 November 2012; *Citywire,* 'EDF profits treble as customers battle record bills', 16 February 2012; *The Telegraph,* 'E.ON reveals higher UK sales as group profits treble', 13 August 2012; *The Independent,* 'Npower profits rise by 34% to £313m', 6 March 2012; *The Mirror,* 'Scottish Power still makes £200m despite 47% drop in profits', 28 October 2011

[66] Ofgem, *The Retail Market Review – Updated domestic proposals,* October 2012.

[67] Flow Energy, Thames Fixed was the cheapest dual fuel, direct debit tariff at 8th of July 2013

[68] Baringa analysis for Which? Nov 2012, based on EBIT data.

[69] Baringa analysis for Which? Nov 2012, 2009-13.5%, 2010- 9.7%, 2011 -19.1%

[70] There are a number of reasons for the range in performance, each company will have their own mix of technologies and overarching business strategy and for this reason looking at generation profits alone may be considered blunt but the CSS EBIT information is the source of the most comparable data. One of which has been the drop in coal price, which meant that gas generators couldn't make much money. And nuclear benefit generally, while they are contracted for base load they can charge whatever the going rate is, regardless of their underlying costs.

[71] Based on EBITDA data from RWE www.rwe.com/web/cms/en/37110/rwe/press-news/press-releases/press-releases/?pmid=4005906

[72] Andrew Wright's response to Q38 and Q49 uncorrected evidence Energy and Climate Change Committee, Tuesday 26th February 2013

[73] Energy and Climate Change Select Committee Oral Evidence Session for the *Profits, Prices and Fuel Poverty enquiry,* May 2013

[74] Ian Rutledge, 'Energy Markets, Industry Structure, and Portfolio Power over Consumers' in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism,* table 8.6.

[75] The segmentation of domestic consumers enables the suppliers to offers quite different prices to different groups of consumers, enabling the suppliers to 'manage' pass through of costs.

[76] Other factors include for example planning or supply chain issues.

[77] As described in the Consolidated Segmental Statements for 2012 produced for Ofgem by Centrica, SSE, Scottish Power, E.ON UK, EDF Energy and RWE npower, accessed online at www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/Reporting%202011%20Results%20Overview%20text.pdf

[78] Based on available wholesale price information and modelling of five different hedging approaches that covered a range of purchasing strategies across a 24 month period.

[79] ScottishPower - gas prices rose by 19% and electricity by 10%, from 1 Aug 2011 www.telegraph.co.uk/finance/personalfinance/consumertips/household-bills/8562207/Millions-of-households-face-record-highenergy-bills.html ; EDF Energy - gas prices rose by 15.4% and electricity by 4.5% from 10 Nov 2011www.bbc.co.uk/news/business-14928311; E.ON - gas 18.1% and electricity 11.4%, from 13 Sep 2011 www.which.co.uk/news/2011/08/eon-is-the-next-supplier-to-raise-energy-prices-260678/; British gas - gas 18% and electricity 16%, from 18 Aug 2011 www.guardian.co.uk/money/2011/jul/08/british-gas-raises-gas-electricity-prices; Npower - gas 15.7% and electricity 7.2% from 1 Oct 2011 www.which.co.uk/news/2011/08/npower-announce-price-hikes-from-1-october-262196/; SSE - gas 18% and electricity 11%, 14th Sep 2011 www.which.co.uk/news/2011/07/scottish-and-southern-energy-to-hike-prices-259397/

[80] Evidence by EDF Energy at Energy prices, fuel poverty and Ofgem, Business and Enterprise Select Committee, Eleventh Report of session 2007/08.

[81] ScottishPower is owned by Iberdrola, a Spanish utility company.

[82] The Telegraph, 'Scottish Power's £800m loan to Spanish owner angers MPs', 14th June 2011.

[83] As described in the Consolidated Segmental Statements for 2012 produced for Ofgem by Centrica, SSE, Scottish Power, E.ON UK, EDF Energy and RWE npower, accessed online at www.ofgem.gov.uk/Markets/RetMkts/rmr/Documents1/Reporting%202011%20Results%20Overview%20text.pdf

[84] BDO LLP, *Ofgem Segmental Statements Review, BDO LLP – Final Report,* January 2012; Ofgem, *Improving Reporting Transparency,* January 2012.

[85] The BDO investigation focussed on general transfer pricing however we have heard reports of supply businesses being charged unreasonable prices for balancing products but there is no firm evidence of this.

[86] See Table 3, Chapter 2

[87] This is the best available data.

[88] Ian Rutledge, 'Energy Markets, Industry Structure, and Portfolio Power over Consumers' in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism.*

[89] Ian Rutledge, 'Energy Markets, Industry Structure, and Portfolio Power over Consumers' in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism,* table 8.3 and updated modelling by Baringa for Which?

[90] Ian Rutledge, 'Energy Markets, Industry Structure, and Portfolio Power over Consumers' in Rutledge and Wright, *UK Energy Policy and the End of Market Fundamentalism.*, p 238.

[91] Ofgem, *Liquidity in the GB wholesale energy markets*, June 2009.

[92] In the first quarter of 2012 the NBP churn was 21.35. By comparison the Dutch TTF was 14.25, while the other main North West European gas hubs were further behind: Germany at approximately 1.3 and the French at 0.6. Patrick Heather, 'Continental European Gas Hubs: Are they fit for purpose?', working paper at the Oxford Institute for Energy Studies, June 2012.

[93] The bid-offer spreads have been found to be as low as 0.1% of the market price for the day ahead gas trades, rising to around 0.4% to 0.6% for monthly and seasonal trades. Ofgem, *Liquidity in the GB wholesale energy markets,* June 2009.

[94] Ofgem, *Liquidity in the GB wholesale energy markets,* June 2009, appendix 3, figure 1.5. The curve refers to the time curve between purchase date and delivery date, the further along or up the curve, the further away from the delivery date.

[95] 2010 figures in *UK Energy Policy and the End of Market Fundamentalism*, p 171 & 194.

[96] Reported in the FT November 2012, (www.ft.com/cms/s/0/611cc5c2-2d02-11e2-9211-00144feabdc0.html#axzz2KzXztk3v; Ofgem and the FCA are currently investigating.

[97] Barry Gardiner, House of Commons Oral Evidence taken before the Energy and Climate Change Committee – Ofgem *Annual Report and Accounts, Ofgem Annual Report and Accounts - corrected evidence* – 26 February 2013, March 2013, p 15.

[98] DECC, Energy Bill 2012 Impact Assessment: reducing barriers to securing long-term contracts for independent electricity generation investment, August 2012;Ofgem, *Retail Market Review: Intervention to enhance liquidity in the GB power market,* February 2012: "Following our Retail Market Review (RMR) in March 2011, we found that consumers were at risk from low wholesale power market liquidity, which was potentially acting as a barrier to entry and reducing the effectiveness of competition." DECC and HMT Energy Market Assessment, March 2010.

[99] Low churn ratios compared to other European market. In 2009 the British market had a churn ratio of 3. By comparison, the Nordic market had a churn level of 7 and the German market estimated to have a level of 8. There are low traded volumes for products bought further out (along the time curve), particularly peak products (electricity volumes bought for delivery during peak consumption hours). Ofgem, *Liquidity in the GB wholesale energy markets,* June 2009, figures 2.4a and b.

[100] Ofgem stated they saw a widening of the bid-offer spread in July 2012 (source: Retail Market Review: GB Wholesale market liquidity update, Ofgem, July 2012), this remained the case in December 2012 (source: Wholesale power market liquidity: consultation on a 'Secure and Promote' licence condition, Ofgem, December 2012)

References

[101] 6% is based on an average of 1TWh generated every day in UK, a total annual UK generation of 370TWH in 2010 from DECC Digest of UK Energy Statistics, July 2011

[102] 3% is based on an average of 1TWh generated every day in UK, a total annual UK generation of 370TWH in 2010 from DECC Digest of UK Energy Statistics, July 2011

[103] Ofgem, *Wholesale power market liquidity: final proposals for a "Secure and Promote' licence condition,* June 2013, Appendix 3

[104] N2EX data reports

[105] In 2012 an equivalent of 97TWh were traded on the auction, a significant increase from the 18.7TWh in 2011.

[106] Centrica to sell 30% of its generation in the UK day-ahead auction 02 July 2012; RWE to sell a third of its annual UK generation volume on day-ahead auctions 29 May 2012; Scottish Power will trade a minimum of 30% of all the power it generates in Great Britain through the day-ahead auction 18th January 2012; E.ON Energy Trading is now trading in excess of 30% of E.ON UK's generation related energy through the Day Ahead Auction with a matching volume from its Retail Sales energy 4th January 2012; SSE Plc, the U.K.'s second-largest power producer, plans to auction all the electricity it generates in the day-ahead market as the government presses for more competition October 2011; EDF Energy-*Ofgem, Retail Market Review: GB Wholesale market liquidity update,* July 2012 confirmed 30% on N2EX in April 2012.

[107] Ofgem's latest set of liquidity proposals look to secure a minimum of 30% of volume traded in the day ahead market. Ofgem, *Retail Market Review – Secure and Promote Consultation*, December 2012.

[108] Ofgem, Wholesale power market liquidity: final proposals for a 'Secure and Promote; licence condition, June 2013

[109] www.statkraft.com/presscentre/news/statkraft-enters-gross-biddingagreement-with-nordpool-causing-higher-spot-volumes.aspx

[110] Ofgem, *Retail Market Review: GB Wholesale market liquidity update,* July 2012.

[111] Ofgem, *Wholesale power market liquidity: proposals for a 'Secure and Promote' licence condition,* June 2013, Figure 1.

[112] Ofgem, *Wholesale power market liquidity: consultation on a 'Secure and Promote' licence condition*, December 2012.

[113] 'Further out' refers to the date for delivery, the further out or the further along the curve, the further in advance the energy is purchased.

[114] Ofgem, *Wholesale power market liquidity: proposals for a 'Secure and Promote' licence condition*, June 2013, Appendix 3

[115] DECC, Energy Bill 2012 Impact Assessment: reducing barriers to securing long-term contracts for independent electricity generation investment, August 2012; Ofgem, *Retail Market Review: Intervention to enhance liquidity in the GB power market*, February 2012: "Following our Retail Market Review (RMR) in March 2011, we found that consumers were at risk from low wholesale power market liquidity, which was potentially acting as a barrier to entry and reducing the effectiveness of competition." DECC and HMT Energy Market Assessment, March 2010.

[116] Ofgem, *Liquidity in the GB wholesale energy markets,* June 2009; Ofgem, *Wholesale power market liquidity: proposals for a 'Secure and Promote' licence condition,* June 2013.

[117] BDO LLP, Ofgem *Segmental Statements Review, BDO LLP – Final Report,* January 2012; Ofgem, *Improving Reporting Transparency,* January 2012.

[118] The market maker does so in the hope of making money from the difference in the bid-offer spread. The market marker can also be funded by other parties in the market for the service of providing liquidity, reducing transaction costs and facilitating trade. This occurs in Nordpool. See Ofgem, *Liquidity Proposals for the GB wholesale electricity market*, February 2010, Appendix 4.

[119] Ofgem, *Wholesale power market liquidity: consultation on a 'Secure and Promote' licence condition*, December 2012.

[120] Institute for Public Policy Research, *The True Cost of Energy,* April 2012.

[121] As the Which? report The Imbalance of Power: The Retail Market published in December 2012 set out this also help contribute to the illusion of competition while keeping the majority of the market segmented away from the best prices.

[122] Energy Suppliers Forum, "*Maintaining a healthy competitive fringe*" – Addressing issues facing independent electricity suppliers, June 2008, accessed online at www.esnet.org.uk/cms/data/files/small%20suppliers%2018%20June%202008/Issues%20facing%20independent%20energy%20suppliers%20paper%20for%20circulation.pdf

[123] Cash out arrangements exist in the gas and electricity markets. Cash-out is the incentive arrangements to keep the system balanced in terms of energy flows in and demand out. Parties are penalised for causing an imbalance in the system as a result of not having a match of their supply and demand.

[124] See Section 3.3, internal transfer prices are often set using market reference prices.

[125] Ofgem, *Methodology for Supply Market Report,* January 2012; BDO LLP, Ofgem Segmental Statements Review, BDO LLP – Final Report, January 2012; Ofgem, *Improving Reporting Transparency,* January 2012.

[126] Ofgem, *GB wholesale electricity market liquidity: summer 2011 assessment,* June 2011, p 12.

[127] Patrick Heather, 'The Evolution and Functioning of the Traded Gas Market in Britain', working paper for the Oxford Institute for Energy Studies, August 2010, p 35; and see Table 3, Chapter 2

[128] Ofgem, *Liquidity in the GB wholesale energy markets,* June 2009 pg 82

[129] Ofgem, *GB wholesale electricity liquidity: summer 2010 assessment,* July 2010, figure 3.

[130] The price indexes will also include exchange data but this will be a small proportion of the total volume of data

[131] Federal Energy Regulatory Commission, 'Final Report on Price Manipulation in Western Markets: Fact-Finding Investigation of Potential Manipulation of Electric and Natural Gas Prices', March 2003, accessed online at www.ferc.gov/legal/maj-ord-reg/land-docs/PART-I-3-26-03.pdf

[132] *The Guardian,* 'Gas prices index launched in wake of fixing allegations', February 2013.

[133] www.tankardindex.com

[134] Standing Committee on Commodity Futures Markets Update to G20 Leaders on IOSCO's Consultation on the Functioning and Oversight of Oil Price Reporting Agencies http://www.iosco.org/library/pubdocs/pdf/IOSCOPD383.pdf

[135] Ofgem, *Pricing benchmarks in gas and electricity markets – a call for evidence,* June 2013

[136] *The Wheatley Review of LIBOR: Final Report*, p 75.

[137] *The Guardian,* 'Second gas price reporter raises concerns about market manipulation', November 2012: "Centrica, the UK's biggest energy supply company and parent company to British Gas, said in a statement it had 'very robust' governance and compliance policies, which regulated its market participation and behaviour. These policies were reviewed on a regular basis, it said. It added: "'Centrica's traders are prohibited from providing price information to price reporting agencies. It's important to stress that the wholesale gas market has more than 50 participants, not just energy supply companies, handling hundreds of trades every day.'"

[138] Ian Rutledge and Philip Wright (eds.), *UK Energy Policy and the Endof Market Fundamentalism* (Oxford: Oxford University Press, 2010), p168 http://www.oilandgasuk.co.uk/2012economic_report/gas_markets.cfm; http://www.timera-energy.com/uk-gas/is-the-uk-gas-market-beingrigged/ House of Commons Business and Enterprise Committee Energy prices, fuel poverty and Ofgem, July 2008

[139] Natural Gas Price Volatility in the UK and North America, The Oxford Institute for Energy Studies, February 2012

[140] Natural Gas Price Volatility in the UK and North America, The Oxford Institute for Energy Studies, February 2012

[141] The less liquid the easier it is for prices to move significantly as a result of a small number of trades.

[142] Electricity and Gas Supply Market Indicators, http://www.ofgem.gov.uk/Markets/RetMkts/rmr/smr/Pages/indicators.aspx

[143] Alistair Phillip-Davies, deputy chief executive at SSE, said that the weekly data has been "consistently higher than the actual profit margins" and that this was "very confusing for customers, who are being given conflicting messages": 'Ofgem data is "confusing energy customers"', Utility Week, 18 March 2013. Energy UK commissioned NERA Economic Consulting to study the rates at which prices rise and fall, looking in detail at Ofgem's analysis. NERA concluded there was no evidence to support the suggestion that prices rise faster than they fall. www.energy-uk.org.uk/publication/finish/5/450.html

[144] Ofgem, *Implementation of the Energy Supply Probe Retail Market Remedies*, October 2009.

[145] Question 47, Page 14, Uncorrected House of Commons Oral Evidence, Energy and Climate Change Committee, Ofgem Annual Report and Accounts, Tuesday 26th February 2013

[146] Optimisation functions will refine the supply and demand position of the vertically integrated energy companies.

[147] See Chapter 2.

[148] Ofgem, *Financial Information Reporting: 2009 Results*, March 2011, section 4.3.

[149] Ofgem, *Energy Supply Probe: Summary of initial findings and remedies*, October 2008.

[150] Ofgem, *The Retail Market Review – Findings and initial proposals,* March 2011.

[151] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition,* June 2013

[152] DECC presentation at Ofgem '*Secure and Promote' seminar,* Spring 2013

[153] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition*, June 2013

[154] Ofgem, *Pricing benchmarks in gas and electricity markets – a call for evidence,* June 2013

[155] Ofgem presentation from 2011. www.foa.co.uk/admin/tiny_mce/jscripts/tiny_mce/plugins/filemanager/files/Power_Trading/OFGEM_presentation_-_20_October_2011.pdf

[156] Consultation on our proposed REMIT penalties statement and procedural guidelines, Ofgem, June 2013

[157] The monthly Which? Consumer Insight Tracker - a poll of 2000 UK adults each month.

[158] Just 28% of consumers trust energy companies to act in their best interests, 56% saying that they do not trust energy companies to provide a fair price. Populus conducted telephone interviews with 2009 GB adults and 201 adults in Northern Ireland between 24th November and 2nd December 2012. Data were weighted to be demographically representative of all UK adults. Populus is a member of the British Polling Council and abides by its rules.

[159] Of Populus above, 46% Of those who don't trust their gas and electricity companies to act in their customers best interests, the top most common responses was 'greedy / too much profit' (46%) 160Generator license condition 17 Prohibition of Discrimination in Selling Electricity.

[160] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition,* June 2013

[161] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition, June 2013; Ofgem, Pricing benchmarks in gas and electricity markets – a call for evidence,* June 2013

[162] Ofgem, *Wholesale power market liquidity: final proposals for a 'Secure and Promote' licence condition,* June 2013