

9. What is driving energy price rises?

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Summary

- There is much discussion and debate about increases in energy bills, often without clear explanation of the main drivers of the increases.
- Policy debates tend to centre around two potentially interlinked questions. Are prices higher than they should be because markets are not effectively competitive? Are prices being driven up too far, or at too fast a pace, because of the push for secure low-carbon energy?
- There are many critics of energy companies, the regulator and the government, but analysis of what the problem is remains piecemeal and there is no agreement on the best way forward. This is perhaps not surprising as the industry is complex and information transparency is a problem.
- Given the lack of confidence in the industry and the policymakers, whether well founded or not, the time may have come for the independent Competition and Markets Authority to undertake a wholesale review of the market.
- Any such review needs to consider the sector in the round, including the impact of existing policy, to determine what the problem is and what the scale of any detriment is. Until the problem is better understood, there is inevitable risk in pushing forward with short-term policies that could potentially create their own distortions.
- Reducing social and environmental charges within energy bills risks increasing the cost of meeting government targets for reduced carbon emissions. Carbon prices are lower for households than for businesses and are much lower for gas consumption than for electricity. This is inefficient. There should be more focus on achieving a consistent carbon price as an efficient part of policy to reduce emissions.

9.1 Introduction

Energy prices and energy policy are never far from the headlines, or indeed debates in the House of Commons. The prevalent concern is that prices are rising and consumers, particularly vulnerable ones, are struggling to pay their energy bills. Consumer prices are not set by government or the energy regulator Ofgem, but are determined by energy supply companies in a market that has been competitive since the late 1990s. They are, however, influenced by the core policy objectives to deliver secure energy supplies, to have a low-carbon energy sector and to protect lower-income consumers.

Towards the end of 2013 there was much discussion and activity around the social and environmental charges within energy bills, which are directly linked to government

¹ Dr Jenkins previously worked at Ofgem on the review of energy network regulation (RPI-X@20) and has advised a number of energy companies on price control issues. All views are the author's own.

policy. These charges make up 9% of the average gas and electricity dual fuel bill. Beyond that, the drivers of bill increases are complicated. It is not enough to point the finger at environmental programmes, although these are the elements most directly in the government's control.

Given the objective of secure, low-carbon energy supply, are the prices paid 'efficient'? That is, do prices reflect investment that is delivered at as low a cost as possible and do energy companies earn no more than a reasonable return on that investment? This ultimately boils down to a question of whether monopoly elements of the sector are effectively regulated and whether markets are effectively competitive. Note that Ofgem has estimated that delivering the security of supply and low carbon objectives, in a scenario of rapid economic growth and rapid environmental action, would require up to £200 billion of investment between 2010 and 2020 for the electricity sector.² With a scenario of rapid economic growth but slow environmental action the investment would be in the region of £110 billion according to Ofgem's analysis. This will obviously have an effect on prices paid by consumers. There is also a side question of whether the protection of lower-income consumers could be better managed through general tax and benefit policy.

How to respond to increasing bills depends on what is driving the increases and what the perceived problem to be fixed is. Is competition not working effectively? Are there external factors, including the range of policy changes, driving up bills directly and indirectly? Is lack of transparency distorting the competitive market? Is the current approach to regulation of the market ineffective? Reaching an answer to the question of what the problem is, and what can be done, requires an understanding of the complex commercial and physical transactions in the market. It also requires an appreciation of the many policies and reforms that are already in place or currently being developed.

In this chapter, we look at trends in retail prices and demand to understand the concern (Section 9.2). We briefly explain how gas and electricity markets work (Section 9.3) and consider the main drivers of price increases (Section 9.4). We then consider whether there is a policy problem to be fixed and, if there is, what it might be (Section 9.5). We go on to explore options for change and to provide advice on how these should be evaluated before energy policy goes through yet another iterative transformation (Section 9.6). Section 9.7 concludes.

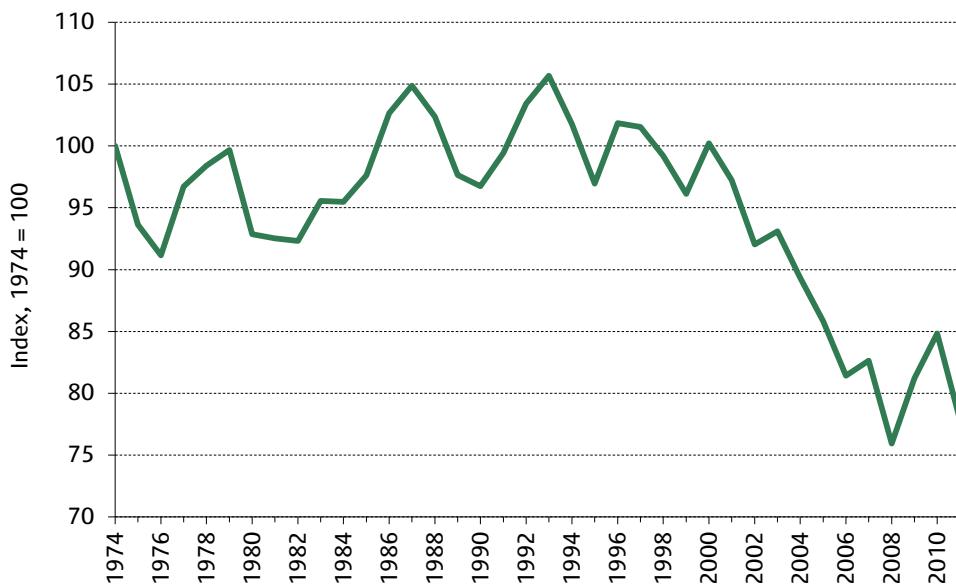
9.2 Bills are rising whilst demand is falling

It is rarely recognised that, despite rising incomes and the fact that we now enjoy much higher levels of average internal temperatures in our homes, energy consumption has actually declined over the past four decades, as illustrated in Figure 9.1. This largely reflects very large increases in energy efficiency.

Driving down consumption further would be one way to reduce bills, and indeed one that would have the additional advantage of reducing carbon in the economy. Increased energy efficiency is an active policy objective of the government and a number of policy initiatives including, for example, the Green Deal and Energy Company Obligations have been or are being introduced. Giving all households smart meters by 2020 will also

² Ofgem, *Project Discovery: Options for delivering secure and sustainable energy supplies*, February 2010, <https://www.ofgem.gov.uk/ofgem-publications/40354/projectdiscoveryfebcondocfinal.pdf>.

Figure 9.1. Average household energy consumption (quantity index)



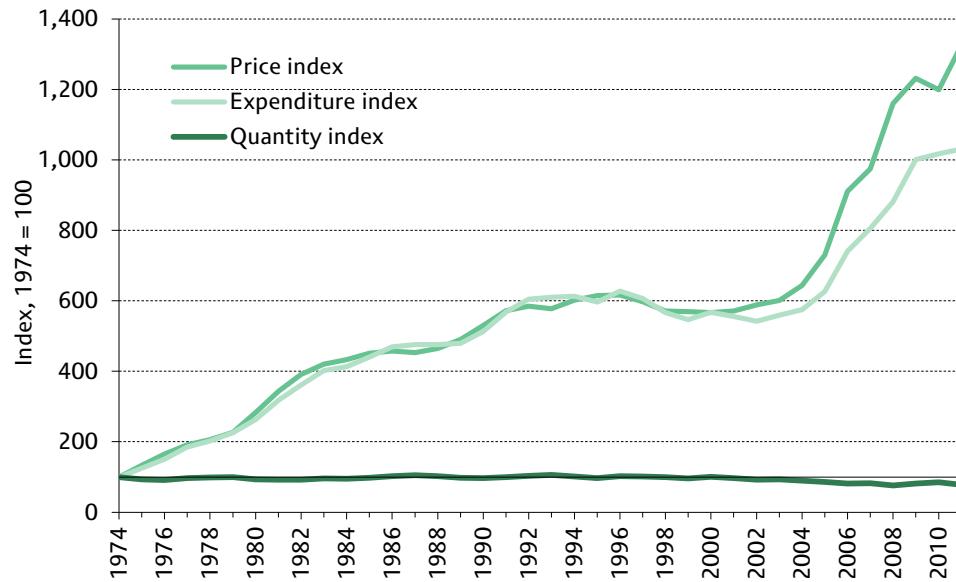
Source: Figure 3.3 of A. Advani, P. Johnson, A. Leicester and G. Stoye, *Household Energy Use in Britain: A Distributional Analysis*, IFS Report R85, 2013, <http://www.ifs.org.uk/comms/r85.pdf>.

provide consumers with real-time information to help them to make better choices about consumption. But it should also be remembered that a high unit price, in part reflecting the cost of carbon, might be an important driver for further demand reduction.

The long-run increase in expenditure on energy bills therefore comes from rising prices, as shown in Figure 9.2, rather than increases in consumption.

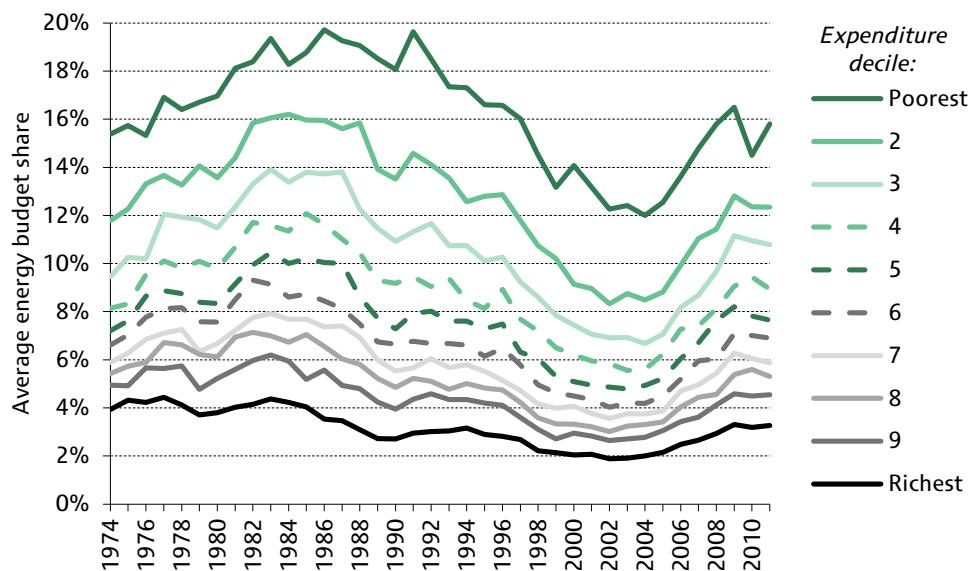
Prices have risen particularly fast in recent years. As is shown in Chapter 6, energy prices rose by 60% between 2008 and 2013, whilst prices as a whole, measured by the CPI, rose by 20%. That chapter also shows that spending on energy takes up a larger proportion of

Figure 9.2. Indices of nominal energy expenditure, price and quantity



Source: Figure 3.3 of A. Advani, P. Johnson, A. Leicester and G. Stoye, *Household Energy Use in Britain: A Distributional Analysis*, IFS Report R85, 2013, <http://www.ifs.org.uk/comms/r85.pdf>.

Figure 9.3. Energy budget shares by expenditure decile

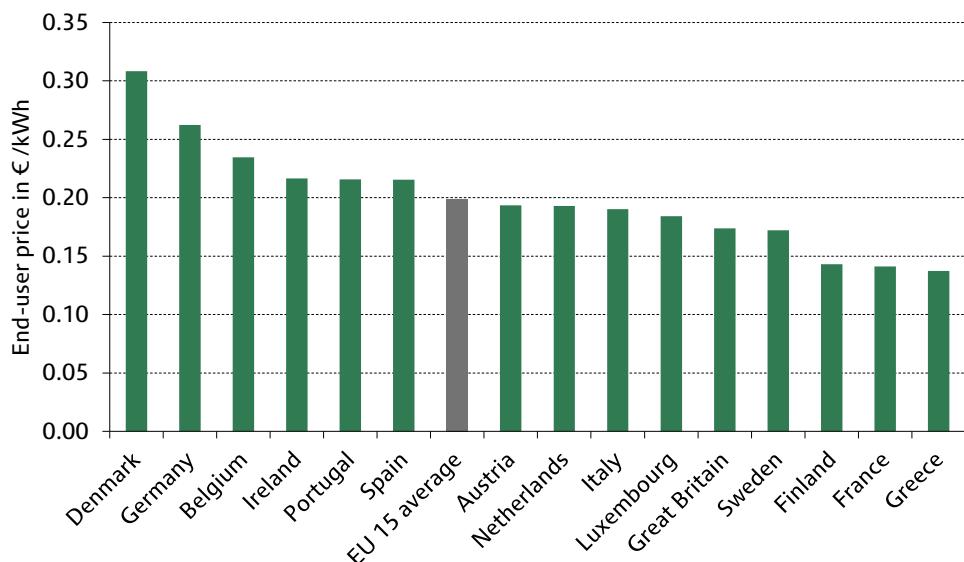


Source: Figure 3.9 of A. Advani, P. Johnson, A. Leicester and G. Stoye, *Household Energy Use in Britain: A Distributional Analysis*, IFS Report R85, 2013, <http://www.ifs.org.uk/comms/r85.pdf>.

the budgets of lower-income households than of higher-income households. In fact, looking at expenditure deciles – i.e. ranking households not according to their total income but according to their total expenditure – the difference is even more pronounced. Figure 9.3 shows that the poorest 10% by spending spend around five times as much of their budget on energy as do the highest spending 10%. But it can also be seen from this chart that while energy accounts for a higher proportion of total spending than was the case in the early 2000s, it is still some way off its mid-1980s peak.

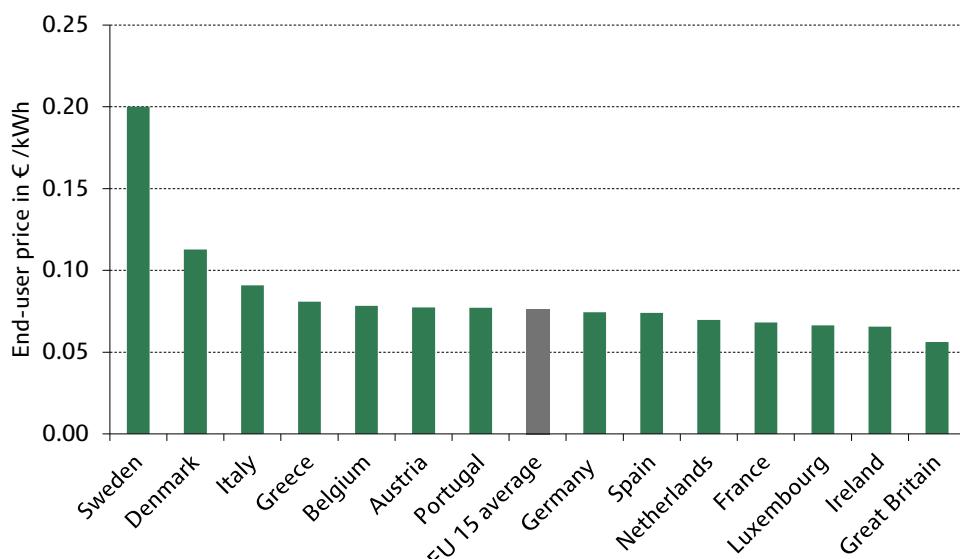
Research by VaasaETT and the Austrian regulator Energie Control Austria over the last four years shows that bills have been increasing all across Europe and recent changes in

Figure 9.4. Average residential electricity prices including taxes, 2012



Source: Figure 2 of European Residential Energy Price Report 2013, http://www.vaasaett.com/wp-content/uploads/2013/05/European-Residential-Energy-Price-Report-2013_Final1.pdf.

Figure 9.5. Average residential gas prices including taxes, 2012



Source: Figure 6 of *European Residential Energy Price Report 2013*, http://www.vaasaett.com/wp-content/uploads/2013/05/European-Residential-Energy-Price-Report-2013_Final1.pdf.

Great Britain have been lower than those in other countries. Electricity and gas prices in Great Britain are also lower than average, as shown in Figures 9.4 and 9.5. The proportion of disposable income spent on gas and electricity bills is also lower in Great Britain than the average in the EU, according to VaasaETT and Energie Control Austria.³

Given the rate of recent price increases and the fact that energy bills matter so much more for lower-income households, it is perhaps not surprising that they have taken on such a high political profile. But these international comparisons, and indeed comparisons with the situation in the 1980s, suggest that the scale of the concern may need to be considered in perspective.

9.3 Keeping the lights and heating on

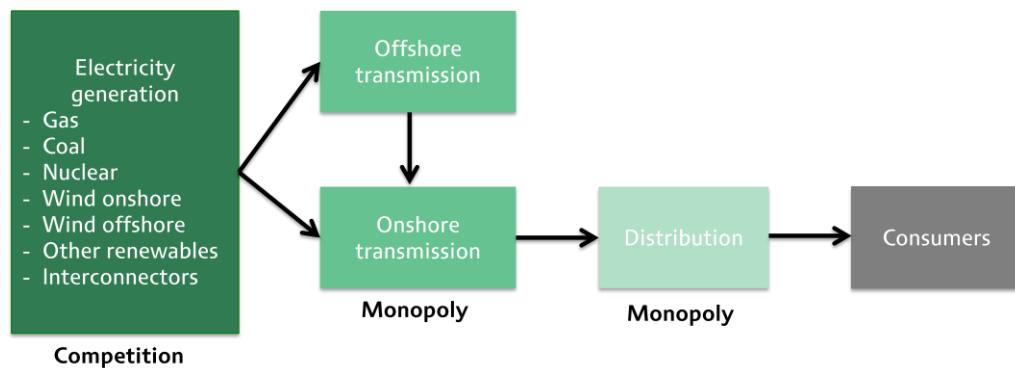
It is important to understand the complex factors that determine energy prices in order to identify what, if any, competition, regulatory or wider policy problem needs to be fixed. In this section, we provide a high-level explanation of the commercial and physical transactions that take place in the electricity and gas industries. We also explain the role of regulation and government policy in the sectors.

The flow of electricity

When a light is switched on or a kettle is put on to boil, a number of different organisations are involved with ensuring that the electricity flows. Generators upstream produce the electricity from a range of different sources. The electricity is transmitted along high-voltage lines and low-voltage local distribution lines to the consumer. The system operator is tasked with ensuring that this all runs smoothly second by second, by

³ See *European Residential Energy Price Report 2013*, http://www.vaasaett.com/wp-content/uploads/2013/05/European-Residential-Energy-Price-Report-2013_Final1.pdf.

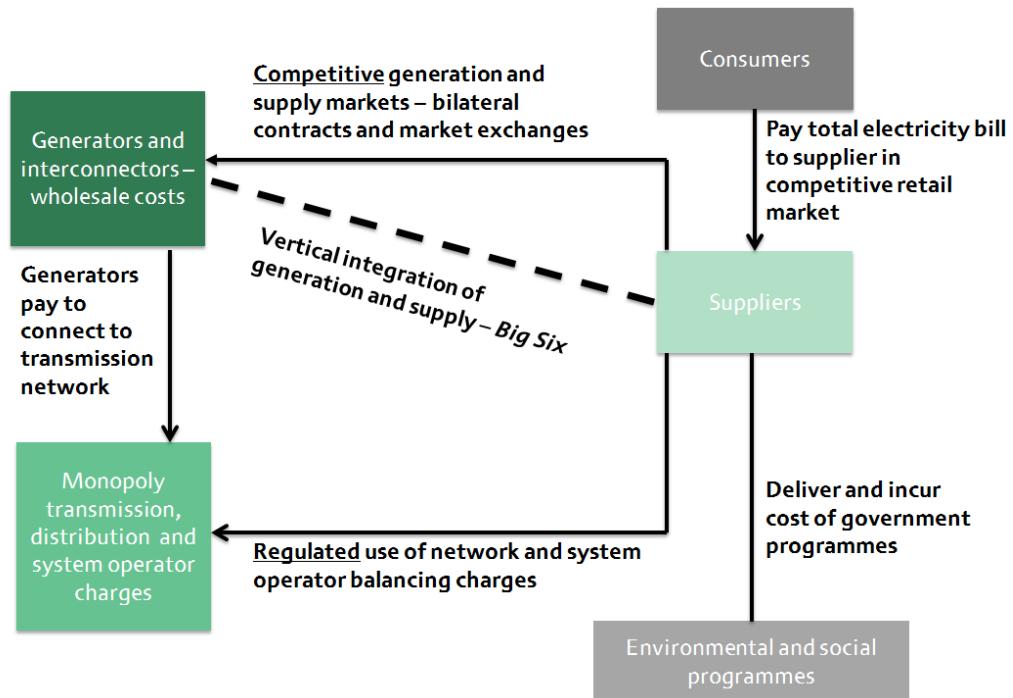
Figure 9.6. The flow of electricity



balancing the supply of electricity with the demand. This physical supply chain is illustrated in Figure 9.6.

Alongside the physical flow of electricity is a series of commercial transactions, as illustrated in Figure 9.7. Supply companies compete to provide services to consumers and set the total price paid. According to Ofgem, the six largest suppliers – ‘the Big Six’ – serve around 97% of the domestic retail market.⁴ The supply companies buy wholesale electricity from competing generators and interconnectors, either directly in bilateral contracts or by trading on open market day-ahead and futures exchanges. The Big Six supply companies are vertically integrated with generation businesses and own, according to Ofgem,⁵ around 70% of total generating capacity. A significant proportion of

Figure 9.7. Commercial transactions in the electricity sector



⁴ Ofgem, OFT and CMA, *State of the Market Report: Assessment Framework*, December 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268025/Assessment_Framework_18_Dec_final.pdf.

⁵ Ofgem, OFT and CMA, 2013, op. cit.

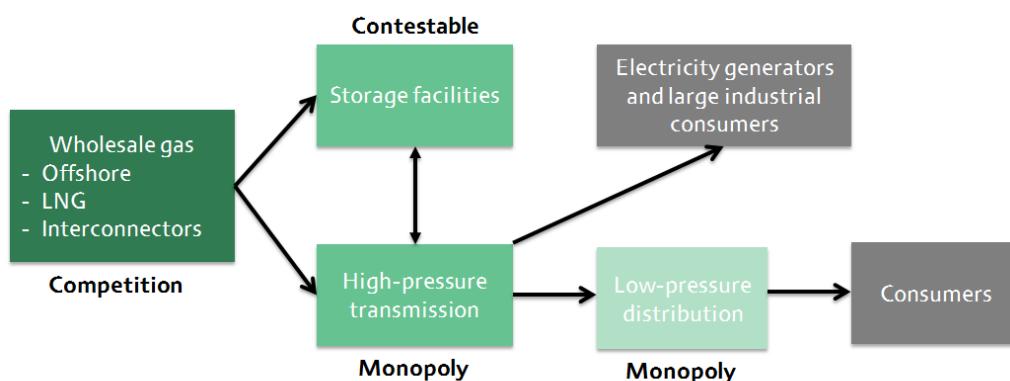
generation is therefore bought through internal transactions, but there is little information available on the scale and prices of these internal exchanges. Supply companies pay regulated monopoly transmission and distribution companies for the use of their networks. They also pay the monopoly system operator a regulated balancing charge if they consume more or less electricity than they were contracted to. In the last decade, supply companies have also been obligated to take on new duties relating to implementation of various government social and environmental programmes. Consumers pay for the costs and incentive payments of these programmes.⁶

The flow of gas

When we turn on or up our gas central heating or light the gas cooker, there are again a number of parties responsible for ensuring that the gas flows, as shown in Figure 9.8. Because storage is possible in gas, the transactions are less time specific than in electricity. The wholesale gas comes from gas fields in the North Sea or Irish Sea or increasingly from liquefied natural gas (LNG). Gas is also purchased from, and sold to, other European countries and transported through interconnectors with Belgium, the Netherlands and Ireland. The gas is transported along the National Transmission System. Gas can be stored within the pipes of the grid or in storage facilities until needed. Some of the high-pressure gas is transported directly to electricity generators and large industrial users and the rest is distributed to consumers along local gas distribution networks. The system operator ensures that the supply entering the system is equal to the demand exiting the system on a day-to-day basis.

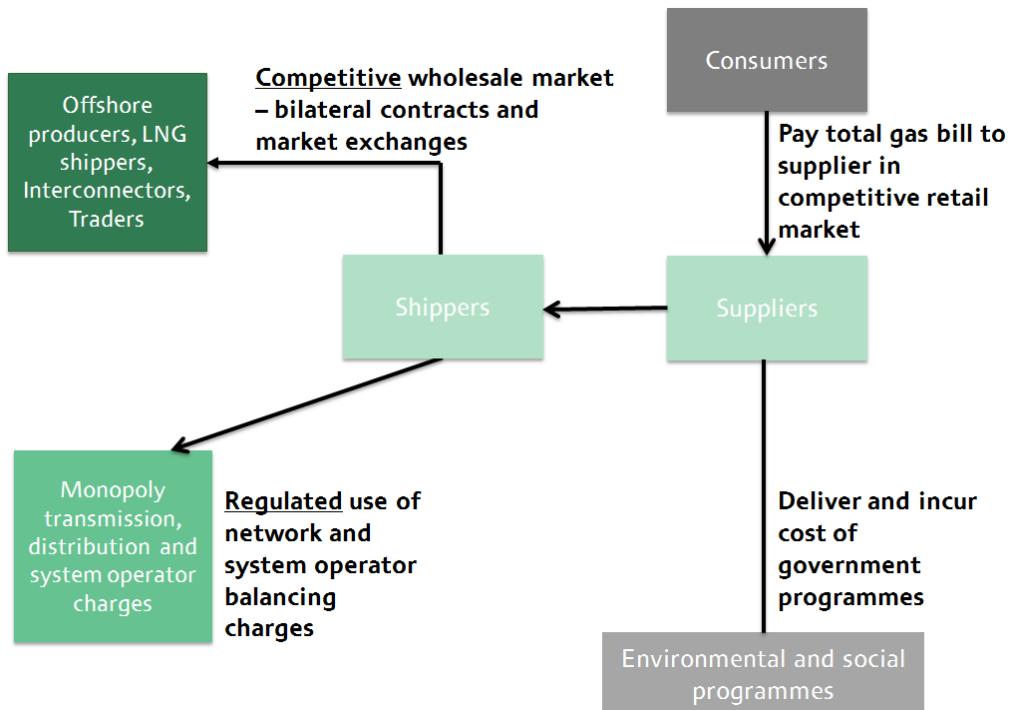
As with electricity, there is a series of commercial transactions associated with the physical flow of gas, illustrated in Figure 9.9. Wholesale gas is sold to shippers through long-term and short-term bilateral contracts and market exchanges. The shippers pay for the gas to be transported along the networks. Shippers sell the gas to supply companies, which pass on the costs of the wholesale gas and regulated network charges to consumers. The supplier, either directly or via the shipper, may also incur a system balancing charge if they are the reason for any imbalance on the system.

Figure 9.8. The flow of gas



⁶ Further details on the bill impact of these policies can be found in Department of Energy and Climate Change, *Estimated Impacts of Energy and Climate Change Policies on Energy Prices and Bills*, 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/172923/130326_-Price_and_Bill_Impacts_Report_Final.pdf and in A. Advani, S. Bassi, A. Bowen, S. Fankhauser, P. Johnson, A. Leicester and G. Stoye, *Energy Use Policies and Carbon Pricing in the UK*, IFS Report R84, <http://www.ifs.org.uk/comms/r84.pdf>.

Figure 9.9. Commercial transactions in the gas sector



Regulation and government policy

Policy in the energy sector is led by the Department of Energy and Climate Change (DECC) and set out in a series of Energy Acts that have been amended six times since 2008.⁷ EU directives have a significant impact on both the environmental and market aspects of policy. Policy objectives have been broadly consistent over the last decade, focused on the need to ensure security of supply, to decarbonise the energy sector and to protect lower-income consumers. Of course, there are tensions between these objectives.

Ofgem, the gas and electricity markets regulator, is responsible for ensuring that the electricity and gas markets work effectively. As an independent national regulatory authority under EU legislation, Ofgem is expected to operate independently from market and political interests. The regulator monitors competition in the wholesale and retail markets and has power to take enforcement action or directly intervene when and where needed. In the monopoly elements of the sector, Ofgem directly regulates the revenue that is earned through price controls.

Ofgem's duties and powers are set out in various Energy Acts and competition legislation. The current principal objective is to protect the interests of existing and future consumers, including taking account of their interests in relation to greenhouse gas emissions and security of supply. With concurrency arrangements, Ofgem and/or the

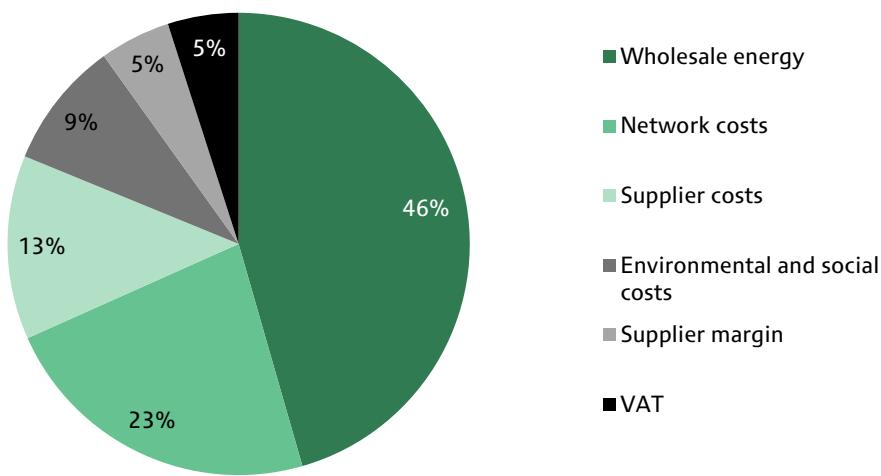
⁷ The most relevant legislation is Gas Act 1986, Electricity Act 1989, Gas Act 1995, Competition Act 1998, Utilities Act 2000, Enterprise Act 2002, Sustainable Energy Act 2003, Energy Act 2004, Climate Change and Sustainable Energy Act 2006, Energy Act 2008, Climate Change Act 2008, Planning Act 2008, Energy Act 2010, Energy Act 2011 and, as of 18 December 2013, Energy Act 2013.

competition authority⁸ can undertake competition investigations and most recently they have jointly developed a competition assessment framework for the market.⁹

9.4 Untangling the bill to make sense of price increases

The layers of commercial transactions in the energy sector translate into a complicated energy bill, with different components that most consumers and indeed some policymakers have little appreciation of. Ofgem's recent estimates of the components of an average consumer's dual fuel bill are shown in Figure 9.10. The biggest cost is wholesale energy costs, followed by directly regulated network costs. This breakdown does not provide any indication of the wholesale profit earned by suppliers.

Figure 9.10. Components of a dual fuel bill, November 2013



Source: Ofgem, 'Understanding energy bills', <https://www.ofgem.gov.uk/information-consumers/domestic-consumers/understanding-energy-bills>.

Electricity bills

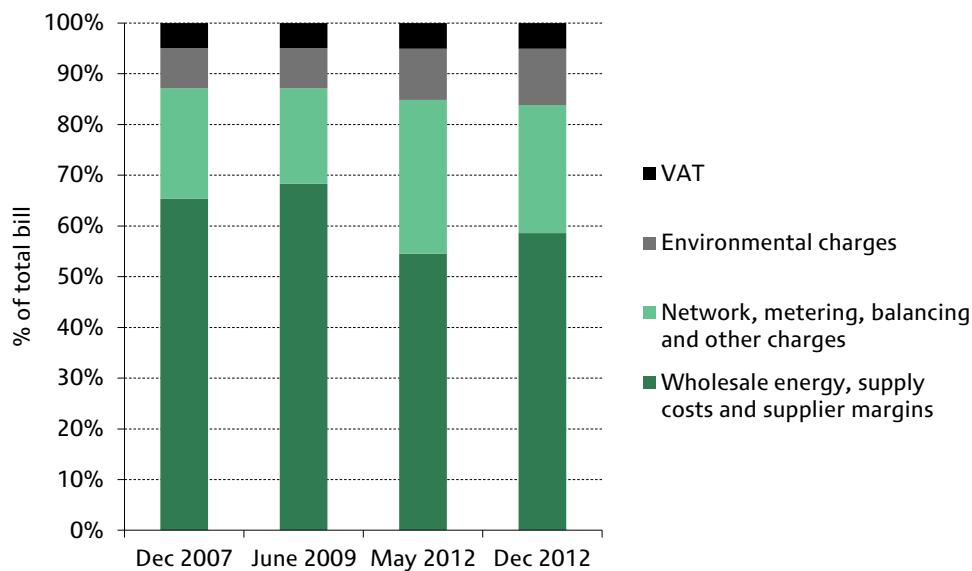
Looking at electricity bills over time, wholesale and supply costs including supplier margins always dominate, as shown in Figure 9.11. There has been some creep upwards in the largely regulated monopoly networks, metering, balancing and other category. There has also been a steady increase in the share attributed to environmental charges.

As illustrated in Figure 9.12, this composition is different from that for other EU countries. In particular, the component associated with environmental charges (energy taxes) in Britain is lower than the EU15 average and our VAT rate on energy is the lowest among the EU15.

⁸ The Competition and Markets Authority (CMA) is to replace the Office of Fair Trading (OFT) in this role from April 2014.

⁹ Ofgem, OFT and CMA, *State of the Market Report: Assessment Framework*, December 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268025/Assessment_Framework_18_Dec_final.pdf.

Figure 9.11. Composition of typical electricity bills over time

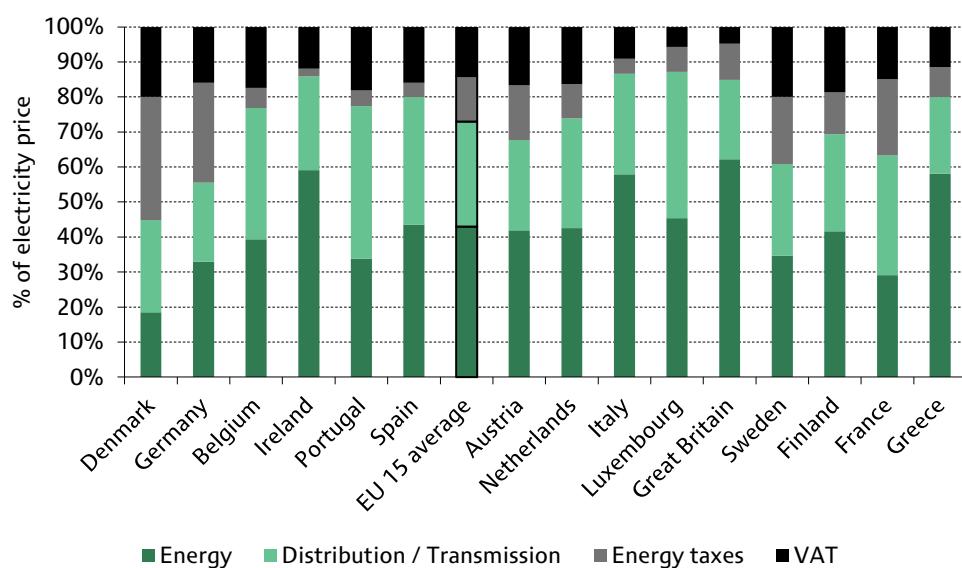


Source: Ofgem, 'Household energy bills explained', January 2008, August 2009, May 2012 and February 2013.

Taking each component of the electricity bill in turn:

- VAT is charged at a reduced rate of 5%. Whilst this adds 5% to the cost of electricity consumption, against a baseline of a standard 20% VAT rate this arguably acts as a subsidy to electricity consumers.
- *Environmental and social charges* have increased as the range of government environmental and social schemes has expanded. There are at least six such policies affecting household electricity bills. Some, such as the Renewables Obligation and feed-in tariffs, directly subsidise renewable generation. Others raise bills to support the installation of efficiency measures for some households. The Warm Home Discount rebates bills for some low-income customers but is paid for through higher

Figure 9.12. Residential electricity price breakdown, 2012



Source: Household energy price index (HEPI) by Energie Control Austria and VaasaETT Ltd 2013.

bills in general. The carbon price floor and the EU Emissions Trading System (ETS) increase the price of electricity at the point of generation. DECC estimates that between them these policies added 17% to household electricity prices in 2013.¹⁰ In the Autumn Statement, the Chancellor announced that the Warm Home Discount would instead be tax funded in 2014–15 and 2015–16, whilst the costs of the Energy Companies Obligation (ECO) would be reduced.

- *Wholesale electricity costs* have increased, according to Ofgem,¹¹ by around 140% in the last 10 years. Increases in wholesale gas prices, determined by developments in global markets, are the primary driver of these increases. Carbon prices, determined through the EU ETS, have also added to generation costs. The investment needed to increase low-carbon generation has increased the cost of electricity generation and will continue to do so. There is a lack of transparency about the efficiency of the wholesale costs paid by the vertically integrated companies in internal transactions and questions have been raised about whether they are higher than they would be if the retail and wholesale markets were effectively competitive.
- The costs of *regulated monopoly network services* have increased in the last decade, and are predicted to continue to increase in the future.¹² Network companies need to increase investment substantially to replace ageing assets and to expand and enhance the infrastructure to facilitate the connection of low-carbon generation and changes in the nature of demand. Under the new price control framework, investment in transmission networks in Great Britain is expected to be around £22 billion between 2013 and 2021.¹³ Electricity distribution price controls have not yet been finalised, but the total expenditure for all companies between 2015 and 2023 is estimated to be in the region of £27 billion.¹⁴ In its final decisions on the transmission and gas distribution price controls, Ofgem estimated that the allowed increases in revenue that the network companies could earn would result in an increase of £6 on electricity bills and £6 on gas bills between 2013 and 2021.¹⁵ Estimates for the bill impact of the electricity distribution network charges are not yet available, but it is clear from Ofgem's review of the companies' business plans

¹⁰ Department of Energy and Climate Change, *Estimated Impacts of Energy and Climate Change Policies on Energy Prices and Bills*, 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/172923/130326_Price_and_Bill_Impacts_Report_Final.pdf. Note that this calculation is done on a different basis from the Ofgem calculations in Figures 9.10 and 9.11 and includes upstream policies as well as those that impact consumers more directly.

¹¹ Ofgem, OFT and CMA, *State of the Market Report: Assessment Framework*, December 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268025/Assessment_Framework_18_Dec_final.pdf.

¹² For a discussion of the history of network price controls under the RPI-X regime, see Ofgem, 'Performance of the energy networks under RPI-X', February 2009, <https://www.ofgem.gov.uk/ofgem-publications/51985/performance-energy-networks-under-rpi-x-finalfinal.pdf>.

¹³ Ofgem, 'Price controls explained', Factsheet 117, 2013, <https://www.ofgem.gov.uk/ofgem-publications/64003/pricecontrolexplainedmarch13web.pdf>.

¹⁴ Ofgem, 'Ofgem requires electricity network companies to deliver more for less', RIIO-ED1 press release, 22 November 2013, <https://www.ofgem.gov.uk/press-releases/ofgem-requires-electricity-network-companies-deliver-more-less>.

¹⁵ Ofgem, *RIIO-T1: Final Proposals for National Grid Electricity Transmission and National Grid Gas*, December 2012, <https://www.ofgem.gov.uk/ofgem-publications/53599/1riiot1fpoviewdec12.pdf>.

that the aim is to ensure efficient delivery of outputs, with an expectation of this element of the bill remaining flat or declining.¹⁶

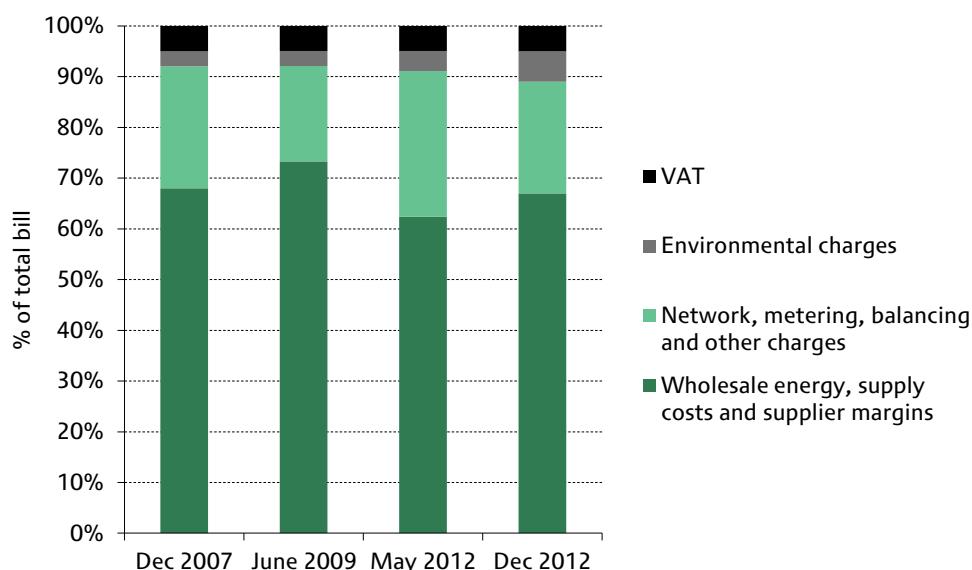
- Regulated system operator balancing charges are relatively small in the total mix. There have been increases and fluctuations in electricity balancing costs in recent years and questions about the appropriateness of the regulatory framework.
- Although small, the supplier cost and supplier margin component of the bill is often a focus for policymakers. Ofgem has found that margins have increased in recent years. Average supply margins earned from domestic consumers were 4.3% in 2012, compared with 2.8% in 2011 and 3.0% in 2010.¹⁷ Limits on rivalry in the sector may also remove incentives to manage costs that could result in direct supply costs being higher than they would be with effective competition. Supply costs are also increasing because of the costs associated with social tariff schemes and increases in bad debt.

Gas bills

The composition of gas bills is similar to that of electricity, as shown in Figure 9.13. Wholesale and supply costs are the largest component. There is an increasing but still relatively small impact from environmental programmes.

The cost of wholesale gas has increased by 240% over the last 10 years according to Ofgem,¹⁸ with a significant peak in winter 2008–09. The rise is attributed to shortages in global oil and gas markets. Following a long period of decline, regulated network charges

Figure 9.13. Composition of gas bills over time



Source: Ofgem, *Household energy bills explained*, January 2008, August 2009, May 2012 and February 2013.

¹⁶ Ofgem, *Assessment of the RIIO-ED1 Business Plans*, November 2013, <https://www.ofgem.gov.uk/ofgem-publications/84945/assessmentoftheriio-ed1businessplans.pdf>.

¹⁷ Ofgem, *The Revenues, Costs and Profits of the Large Energy Companies in 2012*, November 2013, <https://www.ofgem.gov.uk/ofgem-publications/84640/css2012summarydocument.pdf>.

¹⁸ Ofgem, OFT and CMA, *State of the Market Report: Assessment Framework*, December 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268025/Assessment_Framework_18_Dec_final.pdf.

in the gas sector have increased in recent years because of increases in investment to maintain and extend the gas networks.¹⁹ There has also been some increase and fluctuation in the gas system operator costs but these remain small in the overall bill. Gas is treated in the same way as electricity for VAT purposes. As far as environmental and social measures are concerned, gas consumption is subject to far fewer costs than electricity consumption, essentially just the Warm Home Discount and ECO. Given that the first of these is being tax funded for the next two years and the second substantially cut back, the effect will be to leave gas consumption almost untouched by social and environmental measures. Since the effective carbon price on gas consumption is already much lower than that on electricity – indeed, significantly negative if the 5% VAT rate is counted as an effective subsidy – this policy change will only exacerbate inefficient differences in effective carbon prices. Issues relating to supplier costs and margins are the same as discussed for electricity, because the suppliers compete to serve both gas and electricity consumers in the same retail market.

9.5 What is the problem with energy prices?

The primary driver of energy price increases is wholesale cost rises. Rising network costs and environmental charges are also a significant factor. Given these drivers, the two main policy questions to consider are:

- Are retail and wholesale markets sufficiently competitive to ensure that the bills paid by consumers reflect the efficient cost, including a reasonable return on investment, of providing electricity and gas services?
- Are policy objectives for low-carbon and secure energy supplies worth the cost or have they gone too far?

Our focus here is primarily on the first question, although we touch on the second where there are interlinkages.

Potential problems with the market and the regulatory arrangements are discussed here and options for policy change are outlined in the next section. It is recommended that these potential problems are evaluated in the round before any further policy changes are developed and implemented.

Is the problem competition in the wholesale markets?

Although the price rises are significant, it appears to a large extent that Ofgem and government consider the gas wholesale market to be working reasonably effectively. For example, in its review of liquidity, Ofgem's focus has been on the wholesale electricity market and there has been reference to the wholesale gas market being more liquid.²⁰

Ofgem has spent a number of years looking at liquidity in the electricity wholesale market and has expressed concern about the limited amount of their generation that the Big Six

¹⁹ For a discussion of the history of network price controls under the RPI-X regime, see Ofgem, ‘Performance of the energy networks under RPI-X’, February 2009, <https://www.ofgem.gov.uk/ofgem-publications/51985/performance-energy-networks-under-rpi-x-finalfinal.pdf>.

²⁰ See, for example, paragraph 1.18 of Ofgem, *Wholesale Power Market Liquidity: Final Proposals for a ‘Secure and Promote’ Licence Condition – Draft Impact Assessment*, 2013, <https://www.ofgem.gov.uk/ofgem-publications/39303/liquiditydraftia120613.pdf>.

make available, both over the short term and the long term, to other independent supply companies.

Ofgem has encouraged the Big Six to improve access to their generation in the markets. The companies voluntarily signed up to make more output available on the on-the-day market and in longer-term contracts. In Summer 2013, the regulator concluded that the Big Six were not making sufficient improvements in this area. It recently decided on more formal intervention, in the form of a licence condition that places specific obligations on the companies to provide access to long-term products and to participate actively in markets.²¹ Ofgem also launched a review of wholesale trading arrangements in Summer 2013, suggesting that there may be wider grounds for reviewing the effectiveness of the electricity wholesale market.

The government's concerns in the electricity wholesale market are mainly around ensuring that there is sufficient investment in low-carbon generation. The electricity market reforms, brought into legislation in the Energy Act 2013, are designed to encourage more investment in a range of low-carbon generation technologies including nuclear.

Is the problem retail market competition?

Suppliers ultimately decide the price that consumers pay. If they have an element of market power, this will enable them to charge prices above cost and earn higher margins. Ofgem, the government, opposition parties and a wide range of consumer representative organisations have considered and debated whether competition in energy retail markets is working. The main potential areas of concern appear to be the following:

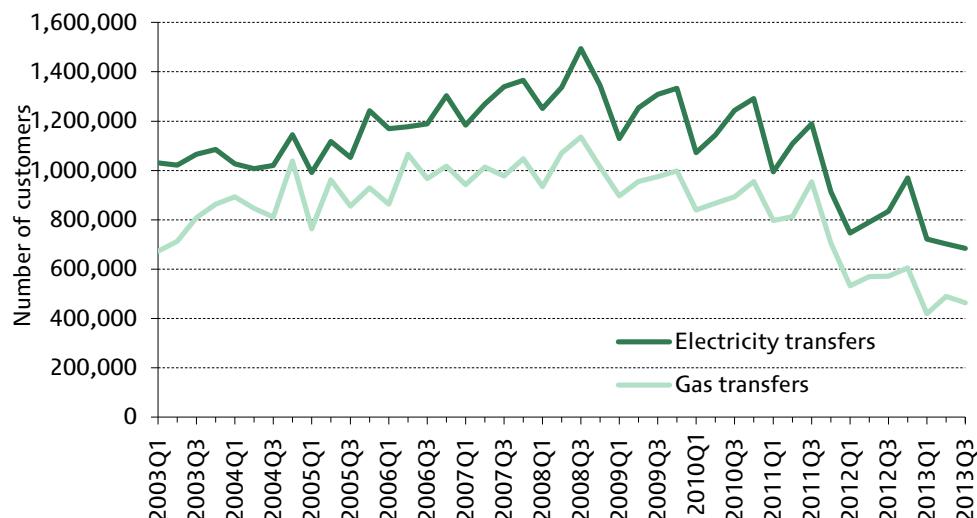
- *Consumer inertia resulting in lack of competitive pressures:* As shown in Figure 9.14, the number of consumers switching between suppliers has declined, and is now at its lowest level since DECC started collecting the data. Ofgem argues, in the 2008–09 Energy Supply Probe and 2010–13 Retail Market Review, that low levels of switching and general consumer inertia enable existing supply companies to charge higher prices to consumers and prevent new entrants from being able to build up a customer base. Ofgem has introduced a number of changes in supply company licences since 2010 to improve consumer engagement and activity in the market, largely around information transparency and reducing the number and complexity of tariffs. It is early days to assess the impact of many of these changes, particularly those that came into force in late 2013, but they are not without their critics.²²
- *Retail prices are out of line with wholesale costs:* As discussed a number of times by Ofgem,²³ concerns have been raised, particularly around the time of the price spike in wholesale gas costs in 2008, that supply companies are quick to increase prices in response to wholesale cost rises but slow to adjust them downwards when wholesale costs fall. Comparing wholesale costs and retail prices at a point in time does not take account of the facts that retail prices change far less often in a year than wholesale prices, supply companies use a mix of length of wholesale contracts to hedge risk and

²¹ Ofgem, 'Wholesale power market liquidity: decision letter', January 2014, <https://www.ofgem.gov.uk/ofgem-publications/85716/wholesalepowermarketliquidity-decisionletter.pdf>.

²² See, for example, S. Littlechild, 'Ofgem and the philosopher's stone', Institute of Economic Affairs (IEA) Blog, 20 November 2012, <http://www.iea.org.uk/blog/ofgem-and-the-philosophers-stone>.

²³ See, for example, Ofgem, *Quarterly Wholesale/Retail Price Report*, February 2009, <https://www.ofgem.gov.uk/ofgem-publications/38391/wholesale-retail-price-link-report-february09.pdf>.

Figure 9.14. Customer switching rates in gas and electricity



Note: Quarterly electricity and gas transfers in Great Britain.

Source: DECC, 'Quarterly domestic energy switching statistics', December 2013,

<https://www.gov.uk/government/statistical-data-sets/quarterly-domestic-energy-switching-statistics>.

there has been an increase in the uptake of fixed retail tariffs. Ofgem has consistently argued that the evidence it has does not support a view that retail prices are significantly out of line with wholesale costs.²⁴ But more work may be needed in this area to determine the extent of the perceived gap and whether there is any signal here of anti-competitive pricing by the supply companies.

- *Retail companies are paying too high a price for wholesale electricity:* As part of their competitive strategies, supply companies will procure energy in different ways and hedge differently, resulting in different wholesale prices. This is consistent with effective competition. However, it is possible that, without significant rivalry in the retail market, supply companies will not be efficient in their hedging strategies, thereby incurring and passing on higher wholesale costs to consumers. There is a lack of transparency about different companies' wholesale transactions, perhaps not surprisingly in a market where hedging is a key element of rivalry, and it is therefore difficult to evaluate the extent to which company prices do or do not reflect efficient wholesale costs.

Is the problem vertical integration?

The vertical integration of the Big Six presents an additional complication to the assessment of competition in wholesale and retail markets. There are questions about the prices paid for wholesale electricity in internal transactions. Allegations have been made, including by the Labour Party,²⁵ that retail companies pay higher wholesale prices, within their own group, to increase margins in the wholesale business. According to Ofgem, the average margin in generation was 20% in 2012, compared with 24% in 2011 and 22% in

²⁴ See, for example, Ofgem, 'Response to allegations that energy suppliers have paid more for electricity than the market rate', 2 January 2014, <https://www.ofgem.gov.uk/press-releases/response-allegations-energy-suppliers-have-paid-more-electricity-market-rate>.

²⁵ Labour Party, *Powering Britain: One Nation Labour's Plans to Reset the Energy Market*, 2013, <http://www.yourbritain.org.uk/agenda-2015/policy-review/policy-review/energy-green-paper>.

2010.²⁶ Such returns may be needed to encourage investment but it is difficult, without a full investigation, to ascertain whether these margins are consistent with a competitive reasonable return. As recognised by Ofgem, there is a problem with transparency of information that makes it difficult to understand the internal transactions within the integrated firms and the relationship between wholesale prices and retail more generally.

Vertical integration is less of an issue in gas. Centrica (British Gas) owns a significant amount of gas production (about one-third of the amount used by domestic and small-to-medium enterprise (SME) consumers²⁷) but, after numerous competition investigations and ownership separation in the 1990s, this has not recently been raised as a matter of concern by government or Ofgem.²⁸

Is the problem the monopoly network companies and system operator?

Monopoly charges make up one-fifth of the bill (see Figure 9.10) and have increased in recent years, as discussed in Section 9.4. Cost increases are driven by a need to replace ageing assets and to update and expand the existing infrastructure to facilitate connection of low-carbon generation and demand-side response in electricity. The revenue earned by the monopoly companies is regulated directly by Ofgem through price controls in the case of network companies and incentive mechanisms in the case of system operator costs. Whether costs and prices are too high in these areas is therefore a matter for regulation.

Ofgem, through its review of energy network regulation (RPI-X@20), identified a number of limitations with the RPI-X approach that was being used and recently introduced an adapted eight-year price control framework. Changes have been made in transmission, distribution and system operation. As the new regime has only recently been introduced, it is too early to evaluate whether and how it could be improved. But in the short term, the processes in place to challenge the levels of cost and returns appear to be robust and the design of the price control is largely consistent with principles for effective incentive regulation.²⁹ The monopoly aspects of the sector are unlikely to be the focus of any significant policy changes going forward, although questions about the effectiveness of the regulator more generally may have an impact.

Is the problem the effectiveness of the regulator?

The competitive markets, both wholesale and retail, have been under more intensive scrutiny by Ofgem since the 2008 Probe. Ofgem took some time to go from the launch of the Retail Market Review in November 2010 to consultation on a final decision in June

²⁶ Ofgem, *The Revenues, Costs and Profits of the Large Energy companies in 2012, 2013*, <https://www.ofgem.gov.uk/ofgem-publications/84640/css2012summarydocument.pdf>.

²⁷ Ofgem, OFT and CMA, *State of the Market Report: Assessment Framework*, December 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/268025/Assessment_Framework_18_Dec_final.pdf.

²⁸ Paragraph 2.11 on page 11 of Ofgem, OFT and CMA (2013, op. cit.) notes that ‘In the gas sector, vertical integration is less of a feature’.

²⁹ C Jenkins, ‘RIIO economics: examining the economics underlying Ofgem’s new regulatory framework’, presented to CCRP Winter Workshop, February 2011, http://www.cjeconomics.co.uk/uploads/6/8/2/9/6829918/jenkins_riio_economics_working_paper.pdf.

2013.³⁰ Some may argue that this is a symptom of an ineffective regulator, whilst others may claim that it is a sign of how complex the market is and how difficult it is to identify problems and develop credible and effective solutions. The investigations have been extensive and a number of policy proposals have been implemented which are yet to take effect. It may therefore be too early to judge whether Ofgem has been effective in regulating the energy markets. But it has taken a long time for the proposals to be developed and implemented and there have been many changes to them along the way. In the meantime, there have been ongoing questions about the effectiveness of Ofgem at regulating the markets.³¹ For example, most recently, the Labour Party is proposing to get rid of Ofgem and introduce a new regulator.³² This is something the coalition government also considered shortly after taking office but the step was not taken, following a review of the regulator.³³

Is the problem wider government intervention?

There has been constant change in energy policy, and the scope of policy has widened, since the New Labour government came to power in 1997. The policies fall largely into two camps: environmental policies designed to encourage energy efficiency and a switch to low-carbon generation and policies aimed at ensuring effective competition in the wholesale and retail markets. The environmental policies drive up energy prices, directly through the environmental charges in the bill but also indirectly, and significantly, through the impact on generation and network investment costs. The competition policies should, assuming they are effective, manage the scale of these cost increases to an efficient level.

Energy policy affects all levels of the supply chain, as illustrated in Table 9.1 for a selection of recent policy measures. There appears to be little discussion of how all the policies work together. Is there duplication and/or have elements of market distortion been missed? Are the continuous changes to proposals and policy damaging investor confidence and therefore offsetting the other policies aimed at increasing investment in the sector?

If policymaking is not joined up, there is a potential risk of intervention in the markets being ineffective or inefficient. The uncertainty about what the next changes will be may increase the costs of investment, and potentially limit the scale of investment. The focus in political debates on energy prices and energy companies may also increase consumer lack of confidence and trust in the market. This could increase awareness of bills and increase switching, but if it leads to customers having a sense that all companies are the same – ‘as bad as each other’ – it could reinforce inertia and low levels of switching. There is also a question of whether government, and wider political intervention and debate, are hampering the effectiveness of the regulator. With energy in the spotlight,

³⁰ Initial Proposals were published in March 2011, an Update in June 2011, Proposals in December 2011, Updates in May 2012 and October 2012, Final Proposals in March 2013 and a Consultation and Decision in June 2013.

³¹ See, for example, Professor Stephen Littlechild’s concerns about the economics behind Ofgem’s retail market proposals in ‘Ofgem and the philosopher’s stone’, Institute of Economic Affairs (IEA) Blog, 20 November 2012, <http://www.iea.org.uk/blog/ofgem-and-the-philosophers-stone>.

³² Labour Party, *Powering Britain: One Nation Labour’s Plans to Reset the Energy Market*, 2013, <http://www.yourbritain.org.uk/agenda-2015/policy-review/policy-review/energy-green-paper>.

³³ Department of Energy and Climate Change, *Ofgem Review: Final Report*, July 2011, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48134/2151-ofgem-review-final-report.pdf.

Table 9.1. Recent examples of energy policy

Policies to encourage investment in low-carbon generation
20% of electricity from renewables by 2020 (UK legal target)
2050 target of 80% reduction in greenhouse gas emissions
Feed-in tariffs
Contracts for difference
Capacity market
Carbon price support
Renewable Heat Incentive
Renewables Obligation
EU Emissions Trading Scheme
Climate change levy and Climate Change Agreements
Planning reform for nationally significant infrastructure
Policies to encourage networks to connect low-carbon generation
Connect and manage access regime
Transmission charging reform
Price control incentives and investment allowances
Market changes and market reviews
New Electricity Trading Arrangements (2001)
British Electricity Transmission and Trading Arrangements (2005)
Enforcement and anti-competitive cases relating to individual firms
Energy Supply Probe (2008–09)
Retail Market Review (2010–13)
Liquidity review (2010–ongoing)
State of the Market Assessment (current)
Future Trading Arrangements project
Market interventions
Licence condition to publish annual information on supply and generation profits
Licence conditions relating to provision of information, helping vulnerable consumers to switch and sales conduct
Licence conditions to reduce complexity and number of tariffs and improve comparability
Commitment to trade proportion of power-station output in day-ahead market
Secure and promote generator licence condition
Transmission constraint licence condition
Reform of cash-out and balancing arrangements

government and Ofgem may be engaging in reactive policymaking that raises the risk of inefficient decision-making and ‘government’ or ‘regulatory’ failure.

Maybe there is no problem

Finally, but importantly, it is worth considering that there may not be a significant competition or regulation problem in this market. Prices may be going up because efficient costs of delivering a valued service are increasing. The cost increases may be reflective of an increase in lumpy investment in infrastructure that requires replacement and updating. At wholesale level, they may also be reflective of scarcity rent. More generally, costs may be increasing because of a choice to encourage low-carbon

generation and energy efficiency. If this policy is considered to be of value for society, then it may need to be recognised more explicitly that it comes at a price.

These are not vote-winning ideas but this is a scenario that requires careful scrutiny. Consumers may have to live with rising prices and, indeed, this may be the trigger needed, alongside the information provided by smart meters, to encourage energy efficiency. The outstanding issue would then become how to assist lower-income households, and that arguably is a broader policy issue.

9.6 Where next for independent regulation and government intervention?

When the gas and electricity industries were privatised, the general idea was that regulation would wither away where competitive markets were feasible, leaving the regulator to only regulate natural monopoly elements. This clearly has not happened, either in terms of creep of government intervention or in terms of the extension of regulatory arrangements affecting apparently competitive markets.

Given this context, and the undeniable fact that energy bills faced by consumers are increasing, where do the regulator and policymakers go next with the energy market? The options are categorised into three policy areas:

- market intervention;
- institutional and industry structure reforms;
- social and environmental charges.

In each category, there is a scale of policy change, from little change (or status quo) to radical. Where on the spectrum Ofgem and government choose to sit must depend on evidence about the scale of the problem. The potential problems are interlinked and it is likely that a holistic approach combining some of these ideas may be needed.

Market intervention options

There are a number of different routes that policymakers could take with respect to competition in the wholesale and retail markets:

- *Leave the market to it:* A decision could be reached that existing interventions in the market are part of the problem and that the best way forward would be for regulators and government to step back and allow the market to determine the efficient price of delivering a low-carbon and secure energy sector. Clearly, the risk with this approach is that, if the market is not competitive, firms with market power are more likely to raise prices to consumers further. A benefit is that a competition authority would be able to monitor the market in its pure form and intervene, using competition law powers, where specific anti-competitive conduct or structural arrangements are identified. This is unlikely to be a policy that any government takes forward in the short term, but it is worth bearing in mind as it is closest to the original objective for the industry at privatisation.
- *Pause and allow current policy proposals to take effect:* This policy approach would be less radical than the first and would prevent any further intervention in the market until the impact of the most recent policy changes had been observed. The policies that have been implemented recently are primarily focused on incentivising changes

in company behaviour. Such incentive schemes, by their nature, take time to work through decision-making and result in different outcomes. Undoing them, or adding to them, before the effects have been observed risks increasing the complexity and inefficiency of the market. Rushing ahead with additional changes is also quite likely to result in regulatory overkill and potential distortions across different policies.

- *Smarten up:* Related to the previous proposal, policymakers could decide to wait and see what impact smart meters, and the associated development of smarter markets, have on consumer and company behaviour. Although the full roll-out will not be completed for some time, there are already numerous trials providing evidence on consumer behaviour changes and further analysis of this information may provide insight on the longer-term dynamics of the market. If other policies, such as limits on the number of retail tariffs, are pushed forward, the full potential of ‘going smart’ may not be realised. The risk with this approach is that while policymakers ‘wait and see’, companies may, if they have market power, use the opportunity to increase prices further. The benefit is that any further market interventions are more likely to be sustainable if they reflect the future dynamics of the market.
- *Re-regulate energy retail prices:* The most extreme form of intervention would be to return to a situation where supply prices or supply margins are formally constrained through some form of price control. Once introduced, it would be difficult for any regulator or government to reverse price controls. Such a policy change would arguably only be warranted if the evidence suggested that other market remedies were ineffective and market power was expected to be a long-term issue. The Labour Party proposal for a 20-month price freeze arguably falls into this category. Whilst such a freeze may help consumers, it does come with risks. Supply companies would bear the brunt of any upward shocks to costs that may hinder entry and investment. When announced in advance, there is also a risk that supply companies will increase prices prior to the freeze. Furthermore, a freeze on prices is unlikely to encourage consumers to get more engaged in the market, something that Ofgem considers necessary for effective competition.

Options for institutional and industry structure reform

As discussed in Section 9.5, some of the potential problems in the sector relate to the vertical integration of the Big Six and the effectiveness of the regulator. The market reforms considered above would not deal with these potential problems as they are largely about changing behaviour. We therefore set out potential institutional reforms that could be considered:

- *Leave competition to the competition experts:* As noted elsewhere, the time may have come for the Competition and Markets Authority (CMA), rather than Ofgem, to undertake a wholesale review of competition in the sector.³⁴ The main merit of this approach is that it would allow an independent body to look at the issues with a fresh pair of eyes. The downside is that such investigations take time.

³⁴ See, for example, views of the former Chief Executive of the OFT, John Fingleton: ‘Only a proper inquiry will deliver a competitive UK energy market’, ft.com, 24 October 2013, <http://www.ft.com/cms/s/0/c8dc3594-3c9c-11e3-a8c4-00144feab7de.html>, and of the first electricity regulator, Stephen Littlechild: ‘Defective regulations are pushing up energy prices as competition suffers’, Institute of Economic Affairs (IEA) Blog, 29 October 2013, <http://www.iea.org.uk/blog/defective-regulations-are-pushing-energy-prices-as-competition-suffers>.

- *Abolish or reform Ofgem:* A more extreme institutional change, already proposed by the Labour Party and previously considered by the coalition government soon after it was elected, is to abolish the energy regulator or significantly reform it. Any reform would raise issues about interactions between government policy and the regulator's work, bearing in mind EU requirements for an independent national regulatory authority. Any significant change would involve costs and there would need to be evidence that the benefits outweigh these.
- *'Macroprudential' regulation of the energy sector:* The focus on a secure low-carbon energy sector has brought to light the need for companies, policymakers and other stakeholders to think about how the sector as a whole works together. Coordination along the supply chain involves complicated Industry Codes and processes. Policymaking also tends to be focused on individual measures and specific problems, with little explicit evidence of how everything works together. To ensure that all companies in the sector, and all government policies, work effectively together, there may be a need for DECC and the regulator to focus more explicitly on how industry conduct, government policies and Ofgem's own regulations work together.
- *Vertical separation of the Big Six:* Policymakers could introduce measures to separate the generation and supply businesses of the Big Six. If vertical integration is leading to foreclosure of the market to new entrants, then this may be the most straightforward way to deal with the problem. However, it comes with a cost in terms of loss of integration synergies and also the direct cost of separation. Intermediate solutions, such as ring-fencing and transparency of information, could also be strengthened but their effectiveness may be subject to challenge.

Social and environmental charges

One driver of cost increases across the energy sector has been the government's focus on delivering a low-carbon energy sector. This is one area where government has rather direct levers to pull if it wants to reduce bills. Indeed, in response to concerns about bills, in the 2013 Autumn Statement the Chancellor announced changes to the Warm Home Discount and ECO which, together with a one-off reduction in energy distribution costs should save households about £50 a year on average.³⁵

A number of further options may be available if the primary aim is to reduce household bills. That could involve reducing commitments to low carbon, keeping the commitments but taking costs off households, or focusing additional help on those with low incomes. While there is no doubt that the current range of policies is less than optimal, it is important to be clear about the following:

- There are domestic legal commitments to reducing carbon emissions as well as EU-level obligations.
- If this is not paid for through bills, it will need to be paid for in some other way.
- An effective carbon price, raising the cost of energy to consumers, is almost certain to form part of an efficient policy for reducing carbon emissions.

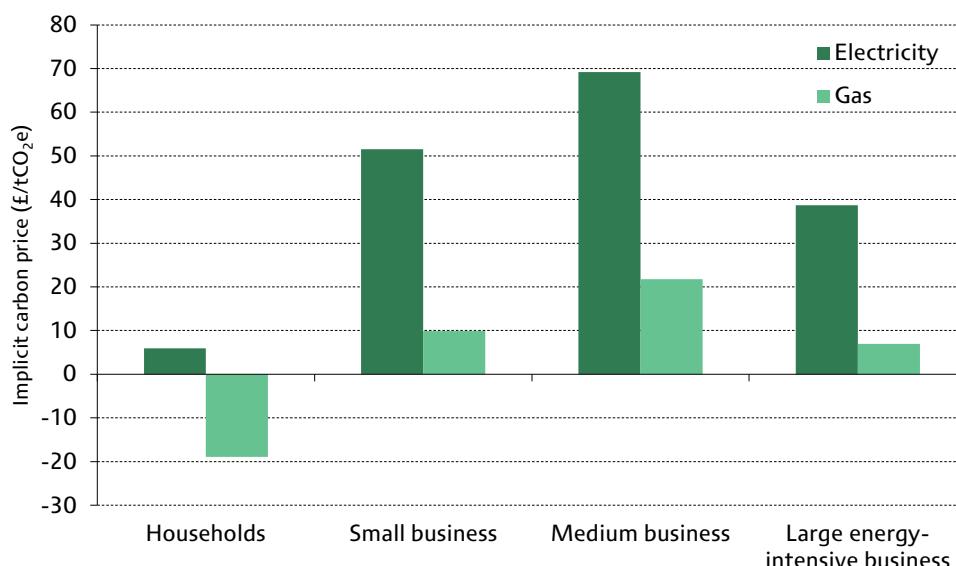
³⁵ Paragraph 1.257 of HM Treasury, *Autumn Statement 2013*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/263942/35062_Autumn_Statement_2013.pdf.

In addition, it is crucial to understand that low-carbon policy does not just affect government programmes. It has an impact on infrastructure investments, and policy consistency is crucial if these investments are to take place in an efficient and predictable manner. So policies aimed at reducing bills in the short run would need to be carefully calibrated to avoid increasing policy uncertainty in the medium term.

With respect to additional costs created by low-carbon policies, an important starting point is that it is already the case that households face a substantially lower effective carbon tax than do businesses.³⁶ This is inefficient. And the effective tax rate on gas is much lower than that on electricity.³⁷ This is also inefficient, providing less incentive to reduce carbon emissions through direct use of gas. It is, in addition, inequitable in that households dependent on electricity to heat their homes, perhaps because they are off the gas network, face much higher effective taxes than others.

Indeed, if one thinks of the reduced rate of VAT as a subsidy, the carbon price on gas is already significantly negative and that on electricity very low. This is illustrated in Figure 9.15, which does count the VAT treatment as a subsidy. The chart also illustrates the extent to which policy has tended to shelter households at the expense of business users. So while policy changes are possible, and some rationalisation of the gamut of policies that currently affect prices would be welcome, the scope for reductions in bills is likely to be limited, especially if overall policy is aimed at reducing carbon emissions in an efficient manner.

Figure 9.15. Implicit carbon prices, by end-user and metered fuel type, 2013–14



Source: Figure 6.4 of A. Advani, S. Bassi, A. Bowen, S. Fankhauser, P. Johnson, A. Leicester and G. Stoye, *Energy Use Policies and Carbon Pricing in the UK*, IFS Report R84, 2013, <http://www.ifs.org.uk/comms/r84.pdf>.

³⁶ A. Advani, S. Bassi, A. Bowen, S. Fankhauser, P. Johnson, A. Leicester and G. Stoye, *Energy Use Policies and Carbon Pricing in the UK*, IFS Report R84, 2013, <http://www.ifs.org.uk/comms/r84.pdf>.

³⁷ Advani et al., 2013, op. cit.

9.7 Conclusion

There has been much debate about the need to make further changes in the energy sector. If any government is considering significant changes to policy in this area, it is important that whatever is done is based on robust evidence-based analysis.

Policymakers need to be clear about what the problem is and what the scale of any detrimental impact is before running forward with reactionary solutions.

There are a number of potential problems, and all of them arguably require further scrutiny, ideally with more transparent information on the Big Six. Given that part of the problem may be the effectiveness of regulation and government intervention more generally, there is a real issue about who is best placed to carry out an independent review of all the interconnected issues. Even if concerns about the effectiveness of the regulator are not well founded, we may be at a point where negative perceptions are affecting behaviour and the only real way forward is for Ofgem to seek a market reference to the Competition and Markets Authority.

Intervention in markets is costly and must be proportionate. Any policy change should only be taken forward where the impact of the policy change, taking account of both direct benefits and inevitable indirect knock-on effects, is expected to be positive. This is a complex market and any competitive assessment will take time, particularly when the overlay of existing regulatory and government interventions needs to be considered. Short-term reactive policies are unlikely to deal effectively with the problem in the long term and they risk creating distortions of their own. If there is to be a lengthy competition investigation, it may be best to focus attention on protections for those struggling most to pay the bills. Such measures will be needed in any case, as, even with an effectively competitive market, prices will continue to increase for the foreseeable future as long as a low-carbon and secure energy sector is the overriding objective.

The government can reduce bills directly by reducing environmental and social charges. But it is committed to large-scale reductions in carbon emissions and these need to be paid for somehow. Paying through the tax system may be more palatable than charges on bills (or it may not). But, in any case, an optimal policy for reducing emissions is likely to include a consistent (and reasonably significant) carbon tax. At present, the raft of measures that impact gas and electricity prices is far from coherent. The effective tax on gas is much lower than that on electricity. And households actually face a lower effective tax rate than do businesses. In addition, charging a reduced rate of VAT on energy consumption – at a rate lower than in any other EU15 country – effectively acts as a subsidy to energy consumption relative to charging VAT at the standard rate. Government should focus on creating a more coherent set of price signals in the energy market consistent with its stated aims on carbon reduction.