Creating a level playing field in the GB retail energy market

CLIENT: ScottishPower

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1 Executive summary

Scope of Baringa's analysis

Baringa has undertaken an economic analysis of competition in the GB domestic energy retail market at the request of ScottishPower, focussing on the following questions:

- Do exemptions from certain social and environmental obligations for smaller suppliers result in a lack of a level competitive playing field for different suppliers?
- What are the key economic impacts of such exemptions on the retail energy market?
- What alternative models of funding social and environmental programmes could avoid such distortions?
- What are the key differences in customer cost to serve between the six large suppliers and smaller independent suppliers?
- What effects on the energy retail market can differences in cost to serve have in combination with a retail price cap?

Value of exemptions

We estimate that participating suppliers face a cost of £36.05 per dual fuel customer per year, or around 4.4% of the cheapest available dual fuel tariff, associated with the Warm Homes Discount (WHD) and the Energy Company Obligation (ECO), conferring exempt suppliers a competitive advantage as a result. The cost advantage reduces gradually between 250,000 and 500,000 customers reflecting the 'tapering' of ECO obligations in this range. However, due to the effect of lagged measures of customer numbers and energy supply being used to determine the extent of obligations on suppliers, we estimate that a supplier with over 500,000 services that is growing at 20% annually would still have an annual cost advantage of £7.53 per dual fuel customer compared to a supplier with a stable number of customers.

Distortions to competition

The primary effect of this on competition in the retail energy market is that exempted companies, in the absence of other cost differences, are able to offer lower prices to consumers. Cost advantages to exempt suppliers appear to be material in the context of the kinds of savings that motivate consumers to switch. In combination with economies of scale, an overall static loss of social welfare would be expected to occur since exemptions ensure a greater fragmentation of the market through greater new entry than a competitive market would normally witness, delayed expansion and fewer mergers than would otherwise occur.

Potential solutions

We find that distortions to retail market competition can be reduced significantly through a mixture of imposing a financial obligation on suppliers with, for example, over 50,000 customers[1], and increasing the frequency with which the value of the obligation on an individual supplier is set. This would retain exemptions for smaller start-up suppliers, thus maintaining a level of stimulus to new market entry. The ECO tapering mechanism can be retained to reduce the chances of the obligation becoming a barrier to growth, although an obligation-free allowance approach could achieve the same aim and may have certain other advantages.

Other differences in cost to serve

Differences in total cost to serve for different suppliers can arise due to differences in the make-up of each supplier's customer base. For example, significant differences in factors such as bad debt costs and the cost of dealing with customer enquiries can arise due to differences in customer demographics or other unobserved characteristics. These can be a result of historic legacy or active choices made by suppliers. For example, newer market entrants that have grown their customer base by attracting more engaged consumers through special offers may have a high proportion of customers that have good credit and are happy to manage their accounts online, which would mean lower bad debt costs and lower cost of addressing customer enquiries.

Evidence from Ofgem's consumer survey, as well as information collected from other Ofgem publications, indicates that, without accounting for any scale economies, average customer cost to serve is likely to be significantly higher for the six large energy suppliers than for the independent suppliers. This difference is particularly evident in the drivers of bad debt costs. Crucially, survey results also suggest that controlling for the mix of payment method in the customer base of suppliers may not be sufficient to explain differences in their bad debt and working capital costs. Hence, differences are likely to be attributable to underlying differences in the characteristics of customers belonging to these respective groups of suppliers.

Differences in cost to serve across customer groups

Baringa used customer-level data provided by ScottishPower in order to estimate differences in cost to serve between different customer groups. Our analysis shows that customers who pay by direct debit and manage their account online have the lowest cost to serve. The cost for customers who pay by standard credit and manage their account online is estimated to be at least £150 higher. This comprises additional bad debt costs, working capital costs and other costs.

There is a further difference in cost to serve between standard credit customers who manage their account online and those who receive paper bills, the bulk of this difference being accounted for by the cost of bad debt. It therefore appears that paper billing is associated with unobserved customer characteristics, most likely demographic, that are associated with a significantly higher propensity to accumulate bad debt.

[1] We note that other schemes such as the Renewables Obligation and Feed-in Tariffs do not have such a threshold.

In order to estimate the effect of unobserved demographic characteristics on customer cost to serve, Baringa used a postcode-based demographic classification of ScottishPower's customers, which was split into the 15 core groups.[2] We calculate that standard credit customers with paper billing who belong to the group with the highest cost to serve[3] have annual average cost to serve that is around £150 higher still than the average for all standard credit customers with paper billing. All of this amount is accounted for by an increase in bad debt costs.

All of the above analysis demonstrates that cost to serve differences between different customer group can be very substantial and that demographic factors play an important role in such differences.

Price cap and cost to serve differences

Cost to serve differences between different customer groups can result in distortions to competition when combined with a price cap on retail tariffs. A cap that is below the cost to serve of some customer groups would prevent normal pass-on of cost differences into prices, impair cost-reflectivity of tariffs, and make it unattractive for most or all suppliers to compete for some types of higher-cost customer. Those customers may not see any meaningful competition and would have less cause to exercise choice of supplier, losing the habit of shopping around. This would make it more difficult to re-introduce competition in those market segments in the future.

Where the cap is below the cost to serve of some customer groups, suppliers would not be able to refuse to supply them and would therefore be forced to cross-subsidise them against other customer groups. This would impair suppliers' ability to compete for other customer types, meaning that competition would also be impaired in other segments of the market.

Finally, evidence on differences in cost to serve between the six large suppliers and smaller independent suppliers, particularly in terms of bad debt costs, demonstrates that using costs of the independent suppliers as a benchmark for setting the level of the cap is likely to miss significant drivers of supplier costs.[4] This could potentially result in a cap that is lower than the efficient cost to serve for a significant proportion of the customer base of the six large suppliers. The potential consequences of this are highlighted above, but could potentially be more severe if large parts of a supplier's customer base have cost to serve that is above the level of the cap.

[2] See http://www.experian.co.uk/assets/marketing-services/brochures/mosaic_uk_brochure.pdf for a description of the core groups. Note that the more precise segmentation into sub-groups was not available to Baringa.

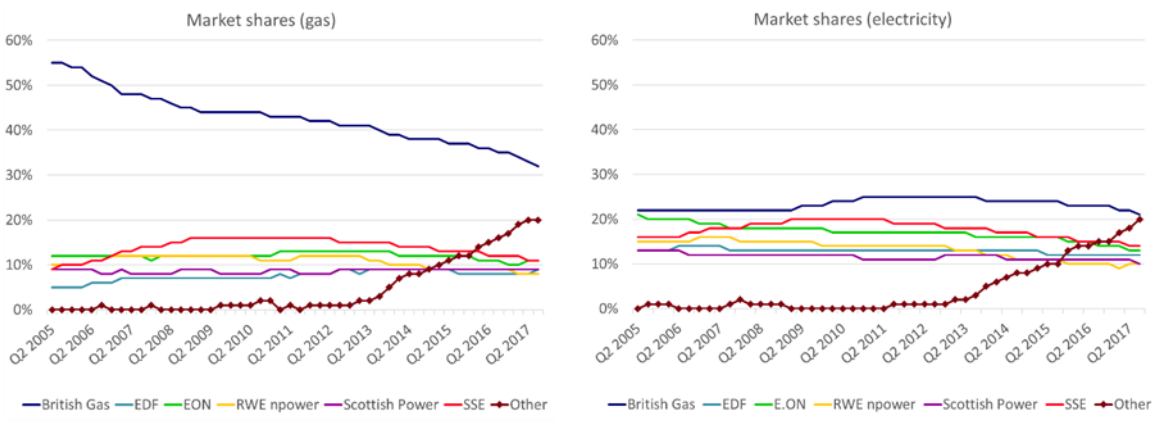
[3] This is Mosaic group 10, which is estimated to have the highest cost to serve, is called 'Transient Renters'.

[4] Using estimates of bad debt costs from the CMA and data from Ofgem's consumer survey, section 4.2 estimates that bad debt costs of the six large suppliers are between £4.5 and £9.4 per dual fuel customer per year higher than for the independent suppliers across all of their customers.

2 Introduction

The domestic retail energy market in GB has seen rapid change in recent years, with the number of active domestic suppliers increasing from 12 to 66 between 2005 and 2018 and independent suppliers growing their combined market share from less than 1% to more than 20% in the same period.[5]

Figure 1 Energy supply market shares



Source: Ofgem, Infographic: Bills, prices and profits, 28 February 2018

The market has also seen a number of significant regulatory developments in this period. The Competition and Markets Authority (CMA) Energy Market Investigation, which concluded in June 2016, resulted in a number of remedies, including a cap on standard prepayment tariffs, a proposed database of disengaged consumers, and removal of key parts of Ofgem's Retail Market Review (RMR) reforms, including restrictions on the number of tariffs. At the same time, industry developments including faster switching and the rollout of smart meters are set to transform the dynamics of the retail market. Crucially, while the CMA had rejected the idea of a cap on all Standard Variable Tariffs (SVTs), subsequent changes in government policy have resulted in a Bill to cap domestic gas and electricity tariffs being laid before Parliament in February 2018.[6]

The Bill would require Ofgem to consult and impose an absolute cap on all default energy tariffs. It further states the cap will be a temporary measure, having effect initially until the end of 2020. The need for it would be kept under review, and extensions could be made, taking into account advice from Ofgem, up to the end of 2023 at the latest.

Baringa has undertaken an economic analysis of competition in the GB domestic energy retail market at the request of ScottishPower, focussing on the following questions:

[5] See https://www.ofgem.gov.uk/data-portal/number-active-domestic-suppliers-fuel-type-gb and Figure 1 of this report.

[6] The Domestic Gas and Electricity (Tariff Cap) Bill is available here: https://publications.parliament.uk/pa/bills/cbill/2017-2019/0168/18168.pdf

- Do exemptions from certain social and environmental obligations for smaller suppliers result in a lack of a level competitive playing field for different suppliers?
- What are the key economic impacts of such exemptions on the retail energy market?
- What alternative models of funding social and environmental programmes could avoid such distortions?
- What are the key differences in customer cost to serve between the six large suppliers and smaller independent suppliers?
- What effects on the energy retail market can differences in cost to serve have in combination with a retail price cap?

The sections that follow set out Baringa's analysis of the issues described above.

3 Environmental and social obligations

3.1 Schemes and exemptions for smaller suppliers

3.1.1 Scheme Background

Energy legislation and regulations place a wide range of social and environmental obligations on retail energy suppliers. In most cases the costs are faced by all suppliers in proportion to their market share. This is the case for example, with the Renewables Obligation, the Feed-in Tariff scheme and the Capacity Market. However, two major exceptions are the WHD scheme and the ECO scheme.

Under the WHD scheme energy suppliers are required to provide financial assistance to eligible customers and under ECO they are required to implement energy efficiency measures. The extent to which suppliers are obliged to participate in these schemes depends on their size and in the case of ECO can vary from fully obligated, to partially obligated, to exempt.

A number of smaller schemes and obligations may impose additional costs on larger suppliers:

- Publication of a Consolidated Segmental Statement (SLC 19A)
- Restricted Meter remedy (SLC 22G)
- Interoperability of Advanced Domestic Meters (SLC 25B)
- Obligations to offer a wide range of payment methods (SLC 27.1)
- Provision of optical labels (SLC 31A.3A)
- Green Deal Arrangements Agreement (GDAA) (SLC 38)
- Smart meter consumer engagement (SLC 45)
- Obligation to become a DCC User (SLC 48)
- Replacement of SMS Apparatus (SLC 50)
- The CMA Database Remedy (SLC 56)

We have not attempted to estimate the cost of these smaller schemes and obligations in our report because it is difficult to obtain reliable estimates. A high-level overview of the schemes is set out in Appendix A.

Finally, we note that five of the six large energy companies are also subject to the mandatory Market Making Obligation (MMO). Although this obligation formally sits in the companies' generation licence, no independent generators without a supply business are subject to this obligation. The cost to obligated companies ranged between £3.5m and £8.5m in 2016.[7]

[7] https://www.ofgem.gov.uk/ofgem-publications/126404, para 2.7

3.1.2 Warm Homes Discount

The Warm Home Discount (WHD) is a government scheme aimed at reducing fuel poverty in Great Britain. Under the scheme, larger energy suppliers are obligated to support customers deemed to be at risk of fuel poverty.[8] Three of the smaller suppliers also voluntarily participate in a part of the scheme.[9]

The WHD scheme has three different elements: the Core Group, Broader Group and Industry Initiatives. Energy suppliers with over 250,000 domestic customer services in the previous year are required to participate in each element of the scheme.[10] Voluntarily participating suppliers meanwhile only take part in the Core Group element.

- Core Group: a £140 rebate for a defined group of low-income pensioners
- Broader Group: a £140 rebate to non-pensioner customers in a fuel poverty risk group
- Industry Initiatives: indirect help to customers deemed to be at risk of fuel poverty

The scheme operates in scheme years (SY). A total WHD spending target is set for each scheme year, and suppliers must contribute towards that target according to their market share (measured in terms of domestic gas and electricity accounts). Table 1 shows the last three schemes year for the WHD and the total spending target in each scheme year.[11]

Table 1 WHD scheme years, rebate and overall target spending[12]

WHD scheme parameters	SY5	SY6	SY7
Scheme year	1 April 2015 to 31 March 2016	23 July 2016 to 31 May 2017	1 June 2017 to 31 March 2018
Core and Broader Group rebate value (per customer)	£140	£140	£140
Total spending target	£320 million	£323 million	£329 million

3.1.3 Energy Company Obligation (ECO)

The Energy Company Obligation (ECO) is a government energy efficiency scheme in Great Britain to help reduce carbon emissions and fuel poverty. The scheme began in April 2013 and has evolved

[8] Warm Home Discount Regulations 2011, No. 1033, 31st March 2011.
[9] See https://www.ofgem.gov.uk/publications-and-updates/faqs-warm-home-discount-scheme.
[10] The term 'services' is defined such that a dual fuel customer represents two customer services.
[11] Obligated suppliers have a degree of flexibility as to how they allocate spending between Broader Group and Industry Initiatives. There is a reconciliation scheme if a supplier has more or less than their share of Core Group customers.
[12] https://www.ofgem.gov.uk/system/files/docs/2018/01/whd_annual_report_sy6_final.pdf

through a number of phases. The latest phase, known as ECO2t or ECO2 Phase 3, applies to measures installed from 1 April 2017 until 30 September 2018.
The obligations in ECO2t are:

- Carbon Emissions Reduction Obligation (CERO) – obligated suppliers must promote 'primary measures', including roof and wall insulation and connections to district heating systems.[13]
- Home Heating Cost Reduction Obligation (HHCRO) – obligated suppliers must promote measures which improve the ability of low income and vulnerable households to heat their homes. This includes actions such as putting in place insulation measures and the replacement or repair of a boiler in appropriate circumstances.

In previous ECO2 Phases, suppliers also delivered against a further obligation called the Carbon Saving Community Obligation (CSCO). As this is now fully delivered, we have not considered it further.[14]

Table 2 shows the total obligations for all suppliers. Ofgem calculates the amount that each supplier is responsible for based on its market share (in terms of customers and energy supplied).

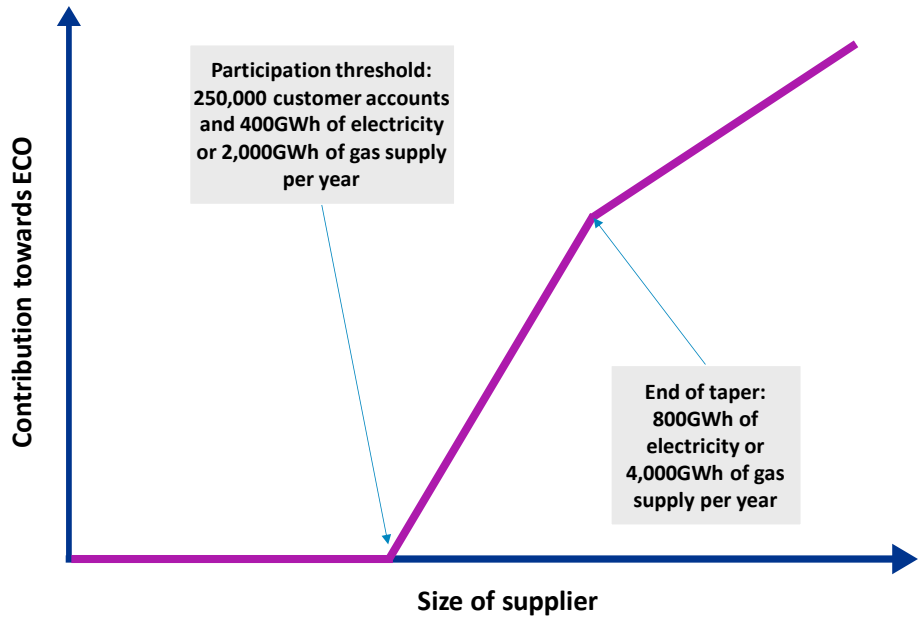
Table 2 Summary of overall ECO2 targets for each obligation[15]

Phase	CERO	CSCO	HHCRO	PSWMR[16]
1	6.2MtCO_2	3MtCO_2	£1.85 billion	2MtCO_2
2	6.2MtCO_2	3MtCO_2	£1.85 billion	2MtCO_2
3	7.3MtCO_2	-	£2.76 billion	1.4MtCO_2

Energy suppliers are obligated under ECO measures if they have over 250,000 customer services and supply over 400 GWh of electricity or 2,000 GWh of gas. Obligations are reduced for suppliers providing over 400 GWh, but less than 800 GWh of electricity, or over 2,000 GWh, but less than 4,000 GWh of gas[17]. This is illustrated in Figure 2. Group company obligations are calculated based on the total customer and energy supply volumes for the group.

[14] Whilst ECO2 largely involves physical delivery (e.g. home insulation), suppliers can trade out their obligations (subject to Ofgem approval). Both Spark Energy and Economy Energy have done so.
[15] A supplier must achieve its total CERO and HHCRO obligations by the end of the overall obligation period (i.e. by 30 September 2018). A supplier must achieve its total CSCO obligation by 31 March 2017. The obligations set for each phase of ECO2 are cumulative and do not need to be met individually. This means, for example, that a supplier is not required to meet its phase 1 CERO by the end of Phase 1. Instead, a supplier's Phase 1 CERO will be added to its Phase 2 and Phase 3 CERO, and its total CERO must be met by 30 September 2018.
[16] Provisional Solid Wall Minimum Requirement.
[17] https://www.ofgem.gov.uk/ofgem-publications/110870

Figure 2 ECO supplier obligation thresholds



3.2 Value of exemptions

In this section, we estimate the economic value of the exemptions granted to smaller energy suppliers. Since it is not possible to estimate the value of all of the exemptions listed in Section 3.1, we focus on those that are most material and for which sufficient information is available, namely WHD and ECO2t. In the absence of information about the next phase of the ECO2 scheme and onward WHD obligations, this provides a reasonable approximation to the potential ongoing future value of these exemptions.

3.2.1 WHD and ECO exemption values

We calculated the total value of exemptions for non-obligated and partially obligated suppliers using publicly available customer numbers[18] [19], cost data[20], segmental accounts for the six large energy suppliers[21] and current obligation targets[22]. We began by calculating the total cost of each scheme to the participating suppliers, then compared these estimates to costs faced by fully exempted and

[18] https://www.ofgem.gov.uk/data-portal/electricity-supply-market-shares-company-domestic-gb
[19] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/647169/table_241.xls
[20] https://www.gov.uk/government/statistics/household-energy-efficiency-national-statistics-headline-release-november-2017
[21] https://www.ofgem.gov.uk/system/files/docs/2017/09/links_to_consolidated_segmental_statements.pdf
[22] https://www.ofgem.gov.uk/environmental-programmes/eco/contacts-guidance-and-resources/eco-public-reports-and-data/energycompany

partially exempted suppliers, dividing by the number of customers in each case in order to obtain estimates that can be compared to average annual dual fuel bills.

Our estimates account for the fact that both ECO and WHD obligation amounts are based on lagged measures of customer numbers and energy supply. Combined with the fact that market shares of small- and medium-sized energy suppliers have increased rapidly as they have signed up new customers in large numbers, this has meant that rapidly growing suppliers have been further advantaged by the fact that any obligations falling on them have not been proportional to their current market share. Average customer and supply volume numbers for the relevant delivery periods can differ substantially from those that are used as the basis for determining the extent of the relevant obligation.[23]

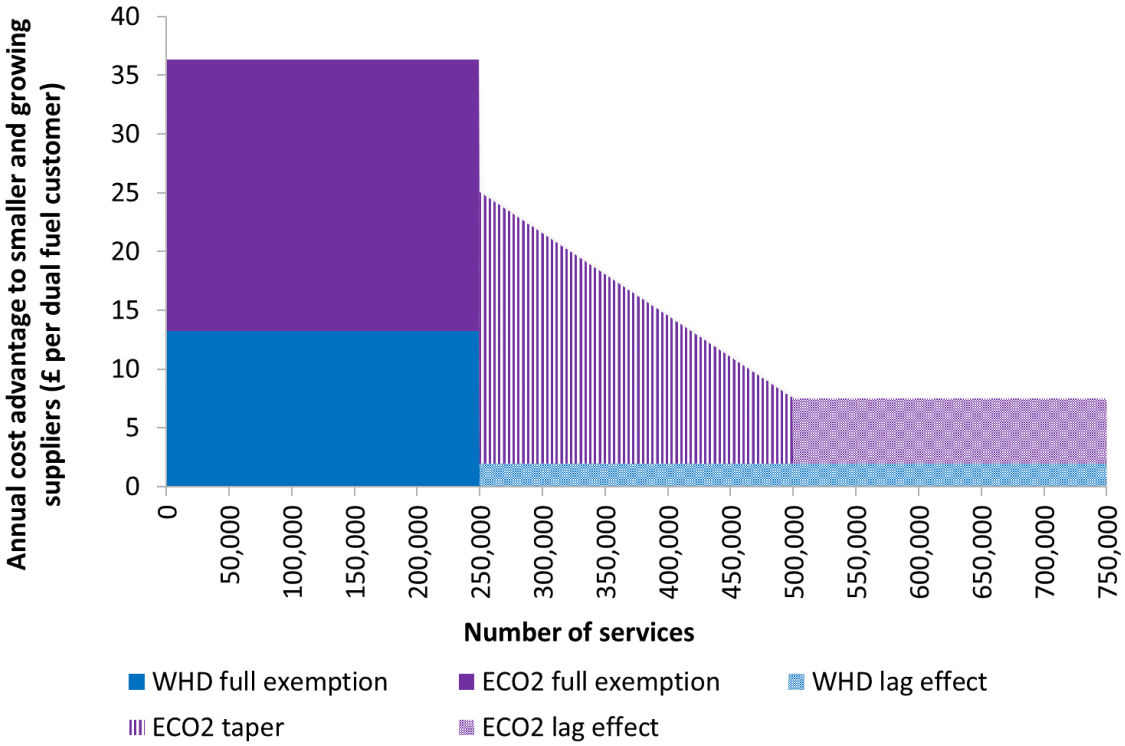
A summary of our estimates of the cost advantage to smaller and growing suppliers under the ECO and WHD obligations is shown in Figure 3. We estimate that participating suppliers face a cost of £36.05 per dual fuel customer per year associated with the WHD and ECO obligations that exempt suppliers do not face, conferring exempt suppliers a competitive advantage as a result. The cost advantage drops to around £25 per dual fuel customer per year when suppliers reach 250,000 services since they are no longer exempted from WHD. The cost advantage then reduces gradually between 250,000 and 500,000 customers reflecting the 'tapering' of ECO obligations in this range.

Finally, due to the effect of lagged measures of customer numbers and energy supply being used to determine the extent of obligations on suppliers, we estimate that a supplier with over 500,000 services that is growing at 20% annually would have an annual cost advantage of £7.53 per dual fuel customer compared to a supplier with a stable number of customers.[24] Although we have not estimated the magnitude in this report, we would note that if a supplier is losing market share (as has been the case, on average, for large suppliers for a number of years), this will carry an additional cost disadvantage as a result of the lag effect.

[23] In the case of ECO, the extent of the obligation is determined by the total supply volume in the period between 1 January 2016 and 31 Dec 2016, with the obligation being delivered over the period from 1 April 2017 to 30 December 2018.

[24] This effect is measured for companies with historic customer numbers above 500,000 and is therefore purely due to growth in customer numbers.

Figure 3 Cost advantage to smaller and growing suppliers under the ECO and WHD obligations



A more detailed explanation of the assumptions and methodology behind these calculations is set out in Appendix B.

3.2.2 Small supplier archetypes

Since the market is evolving rapidly and some suppliers that were previously exempt are now fully obligated, it is informative to consider different 'archetypes' of exempted suppliers rather than specific suppliers at a given point in time. In our analysis, we considered three generic smaller suppliers to represent the spectrum of partly or fully exempted competitors to the six established suppliers to estimate the value of exemptions and analyse the effect of the exemptions on competition in the retail market. A short description of the each archetype is set out below.

- Company 1 is well below the thresholds at which it would be obliged to contribute towards WHD or ECO and hence the value of exemption is calculated on the basis of its theoretical contributions that would apply if there were no thresholds in terms of customer numbers and annual supply for these obligations.
- Company 2 is just over the customer number threshold for both obligations and is also over the minimum supply threshold for ECO. Hence, it is fully obligated under WHD, making the corresponding exemption value zero. For ECO, since the size of the obligation ramps up over a range of annual supply values, and Company 2 is within this range, it is partially obligated under ECO. Its exemption value is given by the difference between its

estimated actual ECO costs and costs that would apply in the absence of any lower thresholds for this obligation.

- Finally, Company 3 is a mid-tier supplier that is well above the customer threshold for WHD and the upper supply threshold for ECO. Hence, its exemption value on the basis of 2016 customer and supply numbers is zero, but it still benefits from the lag effect due to its growth.

Table 12 in Appendix B contains the numerical values for supply and customer numbers for each small supplier archetype. Table 3shows the estimated value of exemptions for the three theoretical supply companies described earlier, which include the estimated difference between the obligation value that they actually face relative to the value that would apply if there were no exemptions for smaller suppliers and obligations were based on current rather than lagged customer numbers.[25]

Table 3 Value of exemptions on a per customer basis[26]

	WHD	ECO2	Total	Total as % of cheapest available dual fuel tariff[27]
Company 1: New entrant growing at 30% annually – fully exempt	£12.96	£23.09	£36.05	4.4%
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£2.39	£17.97	£20.36	2.5%
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£1.97	£5.55	£7.53	0.9%

The values in the table can be viewed as corresponding reductions in the cost of supplying the average dual fuel customer for one year for each type of company as compared to a fully obligated supplier.

3.3 Economic impacts of exemptions

3.3.1 Cost advantages

Above we have described the cost advantage that is available to smaller and growing suppliers. The primary effect of this on competition in the retail energy market is that exempted companies, in the

[25] Since the value of exemptions is calculated on a forward-looking basis for the entire ECO2t delivery period (18 months from April 2017 – September 2018) 'current' customer numbers are based on projected customer numbers for this period.

[26] Based on a weighted average number of customers in the obligation period.

[27] Cheapest available annual dual fuel bill as of November 2017 is £827. Source: Ofgem, Infographic: Bills, prices and profits, 19 December 2017.

absence of other cost differences, are able to offer lower prices to consumers. While it could also be argued that exempted companies may choose to capture this cost advantage into their profit margins, any additional margin would come at the expense of growth in customer numbers. Given the observed growth in this market segment, the possibility of cost advantages being captured in the form of higher margins appears less likely. However, regardless of whether these cost advantages are captured into margins or used to grow customer numbers, they represent a distortion to competition in the retail energy market.

It is worth putting the value of exemptions into context of the kinds of savings that motivate consumers to switch. In the course of the CMA Energy Market Investigation, the CMA commissioned a consumer survey. One of the questions asked was 'what would be the minimum amount of money you would have to save to encourage you to switch your Gas/Electricity/Energy supplier?' Out of the respondents who answered the question, around 25% said that they would switch given annual savings of between £0 and £99.[28] In this context, while the distribution of required savings to switch within the £0-£99 band is not known, it seems likely that an annual saving of £36 would make a significant contribution to helping exempted suppliers win new customers. Furthermore, for the more price-sensitive customers who use Price Comparison Websites (PCWs) to select their energy supplier, a £36 saving on an annual bill can make a significant difference to how high a given offer appears in a PCW results page seen by a customer.

It is worth noting that current cost differences do not fully describe the effect of exemptions on the retail market since they create a potentially strong dynamic by which new suppliers enter the market and take market share from non-exempted suppliers through their ability to remain profitable while offering lower tariff levels to attract new customers. This dynamic contains an in-built feedback loop by which growing market share of exempted suppliers means that the cost of social and environmental obligations must be spread over a smaller part of the market covered by non-exempted suppliers, increasing the per-unit cost of these obligations and thus the magnitude of the cost advantage given to exempted suppliers.[29]

3.3.2 Impact on social net welfare

From the perspective of static social welfare analysis, the cost advantage granted to smaller suppliers through exemption from social and environmental obligations would be a simple transfer between different groups of suppliers in the absence of economies of scale. However, in combination with economies of scale, an overall static loss of social welfare would be expected to occur since exemptions ensure a greater fragmentation of the market through greater new entry than would be expected to occur in a competitive market, delayed expansion[30] and fewer mergers than would otherwise occur.

[28] See Figure 70 of GfK, Energy Market Investigation: A report for the Competition and Markets Authority by GfK NOP, February 2015.

[29] Illustratively, the value of the exemption increases by 12.5% if the market share of exempted suppliers increases from 10% to 20%.

[30] Since obligations are determined by reference to market shares as of 31 December each year, there is a strong incentive to delay crossing the threshold until the following year. Paragraphs 39 and 40 of Appendix 8.1

The specific form that the loss of welfare due to exemptions would take is in higher overall cost to serve, where the sum of the costs of smaller players in a fragmented market is greater than the sum of the costs of larger players serving the same number of customers and benefitting from economies of scale. In the absence of exemptions, there would be a direct incentive for consolidation, but this incentive is clearly weakened if consolidation would mean a loss of exemptions.

It is worth considering briefly the types of costs where economies of scale could be expected to feature. The major components of retail energy bills, the associated costs and a brief assessment of potential for scale economies are set out in Table 4.

Table 4 Potential scale economies

Bill component	Associated costs	Potential scale economies
Wholesale cost	Cost of in-house trading and risk functions or the cost of outsourcing equivalent services.	Cost of in-house trading and risk functions likely to be subject to some economies of scale but option to outsource means that smaller players are unlikely to be disadvantaged provided that the outsourcing market is competitive.
Operating cost	Variety of costs including customer service, metering, marketing and bad debt.	Customer service costs are likely to be subject to the most significant economies of scale given the relatively large share of fixed cost components in data system and call centre costs.
Network costs	Payments to electricity transmission and distribution networks.	None
Environmental and social obligation costs	Variety of costs associated with delivery of physical obligations and administrative cost with regard to financial and other obligations.	Administrative costs likely to be subject to economies of scale, but are very small relative to overall cost of ECO and WHD. Delivery under ECO likely to be subject to economies of scale but can be traded out and turned into a financial obligation and only larger suppliers are obligated.

In summary, economies of scale would be expected to feature significantly in customer service costs and to a lesser extent in other cost components. Exemptions from social and environmental obligations can be expected to increase market fragmentation and reduce economies of scale, with a negative impact on the total cost of the energy system and thus overall social welfare.

to the CMA Final Report on the Energy Market Investigation state that Ovo Energy, Extraenergy and Ecotricity all mentioned having delayed their expansion plans because of the threshold. It also states that Utilita believed that the thresholds were a significant barrier to growth.

3.3.3 Potential distributional impacts of exemptions

In its Energy Market Investigation, the CMA placed emphasis on the apparent correlation between low propensity to switch and vulnerability indicators in domestic customers.[31] If the market share gained by new entrants who are exempted from social and environmental obligations has come from making low price offers and attracting customers with a relatively high propensity to switch, it must follow that, on a market-wide level, this trend has contributed to the weight of the cost of social and environmental obligations falling increasingly on those who have lower propensity to switch. If lower propensity to switch is indeed correlated with vulnerability indicators, the distributional impact of exemptions is likely to be regressive.

We note that the above argument does not refer to the overall effect of the WHD and ECO obligations, which are targeted at more vulnerable households, but at the way in which these obligations are implicitly funded. Funding of obligations through utility bills is generally regressive since utility bills form a higher proportion of overall expenditure of lower income households.[32] If the effect of exemptions from the cost of these obligations is to concentrate the cost on households with lower propensity to switch, this may make the funding model even more regressive.

3.3.4 Potential economic rationale for exemptions

In its conclusions on the Energy Market Investigation, the CMA stated with regard to small supplier exemptions for ECO and Green Deal schemes that "*the rationale for a threshold was that both the Green Deal and the ECO scheme should facilitate entry of small firms as far as possible and not be a significant barrier to entry.*"[33] Below we address separately the issues of avoiding potential barriers to entry and actively encouraging new entry to promote competition.

Concern about the schemes becoming a barrier to entry implies an expectation that smaller suppliers would either have trouble meeting the obligations or find that their unit costs are higher than for established suppliers. The CMA states that "*we consider that the start-up costs and ongoing fixed costs associated with complying with the ECO, FITs, and WHD policy obligations would fall disproportionately on small and new market entrants if there were no thresholds.*"[34] While this is a valid concern for start-up suppliers, it is far less certain that obligation costs would represent a significant barrier to growth for a business nearing 250,000 dual fuel customers.

Another formulation of the argument that obligations can become a barrier to entry is that smaller suppliers lack the logistical capability to deliver programmes such as ECO. In this regard, it is worth noting that WHD is essentially a financial obligation, excluding the cost of administering the scheme, which is likely to be small relative to the financial obligation that it entails. Hence, this rationale can only apply to ECO to any material degree. Here, ECO2 guidance allows for suppliers to trade out

[31] See for example paragraph 248 of the CMA Energy market investigation Final Report.
[32] See Figure 3.2 of https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf
[33] See paragraph 12 of Appendix 8.1 to the CMA Final Report.
[34] See paragraph 57 of Appendix 8.1 to the CMA Final Report.

their obligation partially or completely, effectively turning it into a financial obligation.[35] Indeed, Economy Energy and Spark Energy have chosen to trade all of their obligation. Hence, the desire to prevent smaller suppliers who lack the logistical capability to deliver programmes such as ECO from being disadvantaged in retail competition can no longer be considered to be part of the rationale for the smaller supplier exemption.

With regard to actively encouraging new entry into the domestic energy supply market, the underlying assumption may have been that increasing the number of market participants and reducing market concentration increases the intensity of competition in the market, encouraging all suppliers to set prices closer to marginal cost.[36]

Measures of market concentration such as the Herfindahl-Hirschman Index (HHI) are commonly used as indicators of market power. For example, the United States Department of Justice (DoJ) uses HHI in its assessments on whether a merger is likely to enhance market power. Where the post-merger HHI exceeds 1800, it presumes that mergers producing an increase in the HHI of more than 100 points are likely to create or enhance market power or facilitate its exercise.[37] The underlying assumption is that increasing levels of market concentration can lead to consumer harm, and hence it might be reasonable to assume that the same is true in reverse, namely that falling market concentration may benefit consumers.

Economic theory does not offer a definitive answer to the question of whether there is a relationship between market concentration and pricing behaviour by firms.[38] Empirical studies of the relationship between market concentration and prices or profit margins have yielded mixed results, although some studies have found evidence for a positive relationship between market concentration on the one hand and prices or profit margins on the other.[39]

In the absence of a more reliable guide, it may be informative to examine the HHI market concentration measure in the GB gas supply market and to compare it to the benchmark that the DoJ uses in merger control. The HHI in the GB gas supply market fell below the 1,800 benchmark used by the DoJ sometime in 2016, after declining in every year since 2005, the first year for which market

[35] See chapter 9 of Ofgem, Energy Company Obligation 2017-2018(ECO2t): ECO2t consultation Part one, February 2017.
[36] Noting that exemptions can themselves affect the marginal cost of affected suppliers.
[37] See https://www.justice.gov/atr/15-concentration-and-market-shares
[38] Two basic models of competition, Bertrand and Cournot, produce very different answers. In the Bertrand model, the existence of two competitors is sufficient for firms to price at marginal cost, whereas the Cournot model predicts that price exceeds marginal cost when there are two competitors, and equilibrium price approaches marginal cost as the number of competitors approaches infinity. The Bertrand model of competition is commonly adapted by adding product differentiation, which results in equilibrium pricing being above marginal cost, but it is hard to argue that product differentiation is a significant feature of the energy supply market.
[39] See for example Salinger, Caves and Peltzman, 'The Concentration-Margins Relationship Reconsidered, 1990, and Richard Schmalensee, 'Inter-Industry Studies of Structure and Performance, April 1987, for overviews of applied economic literature on this topic.

share data is available to us. In the electricity supply market, the HHI has been below that benchmark since 2005, with the index estimated at 1,226 in 2017.[40]

Overall, it is not clear whether benefits for consumers in terms of increased competition can be large enough to offset the costs that are set out in Section 3.3. Also, it is likely that the benefits of enhanced competition are subject to diminishing marginal returns. An increase in the number of participants in the supply market from 6 to 10 is likely to have a much greater effect on the level competition than an increase from 56 to 60. Hence, while enhancement of competition may have provided a rationale for the exemptions at the stage when the number of market participants was low, the rationale for retaining the exemptions when the number of market participants is over 60 and market concentration levels are below those that would normally trigger a merger review is likely to be weak.

3.4 Potential solutions

Given the potential negative impacts on competition in the energy supply market and social welfare highlighted in Section 3.3, combined with diminishing returns from encouraging more new entrants into the market, there is a good economic argument for removing the distortions caused by the exemptions. This section explores at a high level some of the potential options for removing these distortions and the relative merits of these options.

3.4.1 Financial obligation on smaller suppliers

Section 3.3 established that the distortions and any resulting negative economic impacts of exemptions for smaller suppliers are caused by the cost differential between smaller and more established suppliers that they create. On the other hand, the CMA considered that the fixed costs associated with running a large delivery programme such as ECO would fall disproportionately on smaller suppliers.[41] An option for smaller suppliers to opt out of physical delivery and make financial contributions instead, would appear to address both of these concerns by removing the financial cost differentials that can distort competition between smaller and larger suppliers, while also avoiding the need for smaller suppliers to incur significant fixed costs by setting up their own delivery programmes. Also, assuming that the total cost of the obligations remains fixed, spreading the total cost of around £1bn per annum across a larger set of customers would reduce the average per customer cost, which would enable currently obligated suppliers to charge lower prices.

As noted in Section 3.1.3, the framework for a solution that involves converting a physical obligation into a financial one already exists since suppliers that are obligated under ECO have the option to trade in their obligation in full. One option is therefore to extend the obligations to all suppliers while allowing them to trade in any physical obligations such as ECO. Variants of this option may include:

[40] Data taken from Ofgem, Infographic: Bills, prices and profits, 19 December 2017. Given the small market shares of the new entrant suppliers, only the market shares of the six large energy suppliers were used in the calculation.
[41] See paragraph 57 of Appendix 8.1 to the CMA Final Report.

1. Allowing small suppliers (e.g. fewer than 250,000 customers) to pay money into a centrally administered fund instead of having to find parties to trade with and risking poor liquidity or high prices.[42] Payments could be determined by Ofgem or another body based on a measure of cost achieved by suppliers in delivering the physical obligation, or determined by another mechanism.
2. Retaining a total exemption for the smallest suppliers, with the threshold being set at, for example, 50,000 customers.

The first point would address any concerns about liquidity in the market for trading obligations, and ensure that smaller suppliers are not disadvantaged relative to larger suppliers. The second point would help to balance mitigation of the distortionary effects of exemptions with avoiding barriers to new entry.

A more radical option would involve moving to a purely financial obligation on all suppliers, with parties paid to deliver the energy efficiency measures. However, as the CMA has pointed out, this may reduce the efficiency and increase the cost of delivering programmes such as ECO.[43]

Finally, it is worth considering the design of the taper mechanism in the context of the above parameters. With a transition to a full physical obligation at the point of obtaining more than 250,000 customers, the taper could apply to the financial obligation in the range of 50,000 – 250,000 customers. This would retain exemptions for smaller start-up suppliers, thus maintaining a level of stimulus to new market entry. An obligation-free allowance of 50,000 customers for all suppliers could achieve the same aim and may have certain other advantages, one being that the rate at which the obligation increases for growing firms would always be proportional to their growth. The obligation would need to switch from a financial to a physical one at some higher threshold in order to ensure that ECO delivery remains efficient overall.

3.4.2 More frequent determination of obligation size

With regard to the issue of cost advantages resulting from growing customer numbers and supply volumes, we note that for the Renewables Obligation and Feed-in Tariffs, obligation size is not based on lagged measures of supply, but rather the obligation is 'settled' after the end of the obligation period based on actual supply numbers. Notwithstanding this, one potential mitigating measure that does not involve using unverified 'expected' numbers over the period in which the obligation is discharged is to increase the frequency of reporting for the purposes of determining the size of the obligation for individual suppliers. Currently, both WHD and ECO rely on reported customer and supply volume numbers that are significantly lagged as shown below.

[42] We note that in the case of ECO direct payments between financially obligated and physically obligated suppliers may be required.

[43] See paragraph 7 of Appendix 8.1 to the CMA Final Report.

Table 5 Lags in determination of size of WHD and ECO obligations

Bill component	WHD SY7	ECO2t
Reference date	31 December 2016 – determined by customer numbers at the end of previous calendar year	1 July 2016 – since the size of the ECO obligation is determined by total supply volume for the previous calendar year
Scheme start date	1 June 2017	1 April 2017
Scheme duration	10 months	18 months
Lag between reference date and mid-point of the scheme	10 months	18 months

Once the size of each obligation is determined, it remains fixed for the whole delivery period, which is 10 months in the case of WHD and 18 months in the case of ECO.

If the size of each obligation were to be reset at six month intervals while retaining the current three month lag for reporting, our analysis suggests that the exemption value of a growing customer base falls by 47% for ECO and 26% for WHD, resulting in a reduction in total exemption value of 42%.[44] While this arrangement would not remove the distortions caused by the current structure of the obligations entirely, in combination with a financial obligation on smaller suppliers, it would mitigate it significantly while largely retaining the current reporting structure.

3.4.3 Funding through taxation

It has been suggested by some commentators that a fairer way to fund obligations such as WHD and ECO is through general taxation rather than levies on energy bills.[45] In particular, it is argued that funding social and environmental obligations from levies on household energy bills is regressive since better-off households spend a lower proportion of their incomes on energy than poorer households. There is evidence to back up this view.[46] On average, funding through taxation is likely to be more progressive, but it is worth noting that not all forms of taxation are equally progressive, with the tiered structure of income tax likely to be more progressive than the flat percentage VAT charge.

Funding the relevant obligations through general taxation would remove the artificial difference in cost to serve between obligated and exempted suppliers. As argued in Section 3.3, given the current

[44] Based on Company 3, which is fully obligated under both schemes but growing.
[45] For example, see p.2 of http://www.nea.org.uk/wp-content/uploads/2018/01/NEA-Response_Call-for-evidence-Dieter-Helm_FINAL.pdf and p.1 of http://www.energysavingtrust.org.uk/sites/default/files/reports/ERP2_The%20Clean%20Growth%20Plan_Tackling%20Fuel%20Poverty.pdf among other examples.
[46] See Figure 3.2 of https://www.ofgem.gov.uk/system/files/docs/2017/10/state_of_the_market_report_2017_web_1.pdf

level of market concentration in the energy supply market, the overall effect of removing this cost difference on economic efficiency is likely to be positive.

Finally, we note that funding of environmental obligations through levies on consumer bills is standard practice across the EU. It is beyond the scope of this study to consider the feasibility of moving towards a taxation funded model, particularly with respect to the UK and broader EU legal framework.

3.4.4 Conclusion

In summary, the distortions to retail market competition can be reduced significantly through a mixture of imposing a financial obligation on suppliers with over 50,000 customers and increasing the frequency with which the value of the obligation on an individual supplier is set. This would retain exemptions for smaller start-up suppliers, thus maintaining a level of stimulus to new market entry. The ECO tapering mechanism can be retained for suppliers with between 50,000 and 250,000 to reduce the chances of the obligation becoming a barrier to growth, although an obligation-free allowance approach could achieve the same aim and may have certain other advantages.

Table 6 shows the estimated value of exemptions for the three supplier archetypes if the changes to ECO and WHD described above are implemented.

Table 6 Value of exemptions after reform on a per customer basis

	WHD	ECO2	Total	Total as % of cheapest available dual fuel tariff[47]
Company 1: New entrant growing at 30% annually – fully exempt	£2.08	£4.13	£6.20	0.8%
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£1.78	£3.56	£5.34	0.6%
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£1.46	£2.95	£4.42	0.5%

[47] Cheapest available annual dual fuel bill as of November 2017 is £827. Source: Ofgem, Infographic: Bills, prices and profits, 19 December 2017.

4 Other differences in cost to serve

4.1 Introduction

Section 3 described how exemptions from social and environmental obligations can create differences in cost to serve between different suppliers, and the effect that this could have on competition in the energy retail market. Differences in total cost to serve for different suppliers can also arise due to differences in the make-up of each supplier's customer base. Such differences exist in many markets and do not in themselves distort competition. However, in combination with the proposed cap on default energy tariffs, cost to serve differences can potentially cause severe market distortions if the cap does not account for such differences or does not leave sufficient headroom for all identifiable customer groups to remain a potentially profitable target for competing suppliers.

Some of the factors that drive cost to serve differences, such as regional differences due to different network costs and differences in the cost to serve customers on different payment methods were recognised by the CMA in its benchmarking calculations and in the initial design of the prepayment price cap. However, significant differences in factors such as bad debt costs and the cost of dealing with customer enquiries can arise due to differences in customer demographics or other unobserved characteristics. This section analyses some of the key drivers of differences in cost to serve, focussing particularly on differences between the six large energy suppliers and independent suppliers. This focus reflects the fact that costs of some of the independent suppliers formed the basis of the CMA's prepayment price cap that applies to all suppliers. Section 5 then uses evidence on cost to serve differences to highlight the distortions that can result from the combination of these differences with a price cap that fails to account for them fully.

Differences in suppliers' cost to serve due to differences in customer characteristics can exist as a result of historic legacy or active choices made by suppliers. For example, newer market entrants that have grown their customer base by attracting more engaged consumers through special offers may have a high proportion of customers that have good credit and are happy to manage their accounts online, which would mean lower bad debt costs and lower cost of addressing customer enquiries. Equally, different established suppliers may have different costs to serve because of differences in their legacy customer base from the time before market liberalisation. For example, suppliers that have a legacy customer base in a poorer region are likely to have higher costs to serve due to factors such as bad debt costs and the cost of Priority Services.

Finally, the type of cost differences between established and independent suppliers described above can also be subject to a dynamic that magnifies those differences over time. For example, if independent suppliers attract customers that are less likely to fall behind with their payments, the remaining customers of the established suppliers are, on average, more likely to do so. This dynamic can be expected to be modest while the market share of suppliers that pursue this strategy is low. However, as the market share of suppliers pursuing this strategy increases, this dynamic can become significant, driving even greater differences in cost to serve between different types of supplier.

The first part of this section explores the information on cost to serve differentials that can be obtained from public domain sources. Notably, Ofgem published its 2017 consumer engagement survey and made its raw data file available upon request.[48] The survey asks the respondents for the identity of their supplier. While Ofgem is not able to share data on identity of individual suppliers, it is able to identify respondents by whether they are with one of the six established suppliers or with one of the independent suppliers.[49] Identification of individual survey respondents to one of these two groups allows for a number of informative comparisons to be made, particularly with regard to customer characteristics that are associated with significant costs for suppliers.

The last part of this section uses customer-level data provided by ScottishPower to Baringa in order to demonstrate differences in cost to serve between different customer groups.

4.2 Payment by standard credit

As demonstrated in Section 4.6, the greatest difference in cost to serve between different customer groups is likely to relate to the cost of bad debts accumulated through non-payment of bills, as well as the cost of providing working capital for customers who pay their bills by standard credit. This is supported by the CMA's findings in the course of the Energy Market Investigation, which estimated that the average annual cost of bad debt for a dual fuel customer paying by standard credit is between £38 and £80 higher than for a customer paying by direct debit. The equivalent differential for working capital cost was estimated to be between £37 and £54.[50]

Table 7 shows the key takeaways from the Ofgem survey in relation to payment by standard credit and bill arrears. Survey results show that the six large suppliers have a significantly higher proportion of customers paying their bills by standard credit. This difference, in absence of other factors, would be expected to result in six large energy suppliers having higher average per customer cost to serve if the mix of payment methods in the customer base is not controlled for. This is supported by the fact that a higher proportion of customers of the six large suppliers reported falling behind with paying their energy bill at least once in the past year.

Crucially, survey results also suggest that controlling for the mix of payment method in the customer base of suppliers may not be sufficient to explain differences in their bad debt and working capital costs. Taking the subset of survey respondents who pay by standard credit, a substantially higher proportion of those who are identified as being with one of the six large energy suppliers reported falling behind with paying their energy bill at least once in the past year compared to corresponding customers of independent suppliers. This suggests that there are other customer characteristics apart from payment method that can determine the bad debt and working capital costs of suppliers, and that there may be differences in these characteristics between the customer base of the six large energy suppliers and those of the independent suppliers.

[48] See https://www.ofgem.gov.uk/publications-and-updates/consumer-engagement-survey-2017

[49] In particular, the survey database shared by Ofgem with Baringa identifies a customer who provides a response as being with one of the six established suppliers if their electricity or gas is supplied by one of those suppliers.

[50] See Table 14 of CMA, Appendix 9.8 to the Final Report: Analysis of indirect costs by payment method.

Table 7 Key takeaways on payment by standard credit and bill arrears from Ofgem consumer survey

	Six large energy suppliers	Independent suppliers	Ratio
Customers paying by standard credit	19.3%	7.5%	2.6
Customers reporting falling behind with paying their energy bill at least once in the past year	4.6%	3.0%	1.5
Customers paying by standard credit who reported falling behind with paying their energy bill at least once in the past year	6.6%	3.0%	2.2

A big differential in the proportion of customers who fall behind in their bills between the six large energy suppliers and independents is also revealed by analysing total numbers of customers in debt and entering debt repayment arrangements. Table 8 summarises the key statistics, collected from various Ofgem sources, which relate to debt of energy customers of the six large suppliers and independents.

Table 8 Bill arrears statistics for six large energy suppliers and independents[51]

	Electricity			Gas		
	Six large suppliers	Independent suppliers	Total	Six large suppliers	Independent suppliers	Total
In debt repayment arrangement	653,583	28,178	681,761	558,269	19,655	577,924
In arrears but not in repayment	439,402	73,527	513,874	338,949	54,051	393,438
Total in debt	1,092,985	101,705	1,195,635	897,218	73,706	971,362
% in debt	4.6%	2.3%	4.2%	5.1%	2.1%	4.6%
Market share (Q4 2016)	84%	16%	100%	83%	17%	100%

In Table 9, these statistics are used to produce some comparisons between the six large suppliers and independents. In particular, it shows that the six large energy suppliers have more than twice the proportion of customers who are in debt compared to independent suppliers. This highlights a significant difference in the customer base of these supplier types, which leads to the six large suppliers having higher per customer cost to serve than the independents.

[51] Source: Market shares taken from Ofgem, Infographic: Bills, prices and profits, 19 December 2017. Total number of customers in debt for electricity and gas taken from p.25 of Ofgem: Vulnerable consumers in the retail energy market: 2017. Total numbers of electricity and gas customers in arrears but not in repayment taken from p.28 of Ofgem: Monitoring company performance – annual reporting (2016). Total numbers of electricity and gas customers in arrears but not in repayment taken from p.2-5 of Ofgem: Monitoring company performance – annual reporting (2016). Shares of indebted electricity and gas customers of the six large suppliers and independent suppliers who are in debt repayment arrangements taken from Figure 8 of Ofgem: Vulnerable consumers in the retail energy market: 2017.

Table 9 Ratio of customer debt statistics between six large energy suppliers and independents[52]

	Electricity	Gas
In debt repayment	4.3	5.6
In arrears but not in repayment	1.1	1.2
Total in debt	2.0	2.4

4.3 Online account management

An additional factor that can influence a supplier's cost is how a customer manages their account. Those that manage their account online do not require paper bills and other paper communications, which are a direct cost to suppliers. However, there may also be an indirect relationship between online account management and cost through other customer characteristics that are correlated with online account management. For example, if customers who are happy to manage their account online are less likely to fall behind with bill payments, they are likely to have a lower associated cost of bad debt. Also, if customers who are happy to manage their account online are less likely to require help in reading their meter, they are likely to require fewer meter read call-outs and thus have a lower cost to serve. The Ofgem survey provides some evidence that this may be the case. The average reported annual income for those with an online account is £34,549 compared to £23,284 for those on paper billing.[53] Also, 27.0% of those on paper billing reported themselves or their partner having some kind of disability or impairment, compared to 14.8% of those who manage their account online.[54]

Responses to Ofgem's survey suggest that online account management is substantially more prevalent among the customers of the independent suppliers than among customers of the six large energy suppliers. 43.1% of respondents served by the six large energy suppliers reported managing their accounts online. This compares to 60.8% of respondents served by the independent suppliers doing so. This suggests that there may be significant additional differences in the average customer cost to serve between six large energy suppliers and independent suppliers.

4.4 Priority Services

Another factor related to customer demographics that can significantly affect a supplier's cost to serve is eligibility for Priority Services. All suppliers must promote and offer such services. Customer

[52] Calculated as (Large supplier statistic / Large supplier market share) / (Independent supplier statistic / Independent supplier market share).
[53] Since annual income was reported in ranges, point income estimates were identified as the midpoint of every respective range. Point estimate for the >£80,000 range was assumed to be £85,000.
[54] Q131 of the GfK survey. Possible impairments include any long-term illness, physical or mental health problem or disability which limits daily activities or the work that a person can do, including problems due to old age.

eligibility can arise as a result of disability, chronic sickness, pensionable age or other characteristics or circumstances that could mean customers need more support to manage their energy. Services that can be requested by those who register, depending on need, include a password scheme, free gas appliance safety checks, additional advice and information, regular meter readings, moving a prepayment meter, accessible bills and statements, redirection of communications to a nominated person and other services as identified and offered by particular suppliers.[55]

Ofgem introduced changes to customer eligibility for the Priority Services Register (PSR) in January 2017 and expects that numbers of customers on the PSR and those services taken up by suppliers will increase from the latest available reported figures for 2016.[56] By 2016, nearly 18% of electricity customers of the six large energy suppliers were reported to be on a PSR compared to less than 7% of electricity customers of medium and smaller suppliers.[57] In that year, by far the most common service provided to PSR customers was regular meter reading.[58] This can have a material effect on a supplier's customer service cost since it requires several call-outs to a customer's home per year. Hence, the difference in the proportion of PSR customers between the six large energy suppliers and independent suppliers, combined with the substantial financial cost of some of the most commonly provided Priority Services, can account for a material difference in cost to serve between these two supplier groups, although we note that some lessening of this effect is expected with the advent of smart metering.

4.5 Dual fuel tariffs

Finally, differences in cost to serve between different suppliers can also be driven by whether a customer is buying a single fuel or both fuels. This is due to economies that the supplier can achieve in terms of billing, customer contact and meter reading if it is required. Ofgem's survey database does not provide responses on whether a respondent is on a single or dual fuel tariff and hence a direct comparison between customers of the six large energy suppliers and independent suppliers on this characteristic is not possible. However, as a proxy for the distinction between different types of supplier, the data tables attached to the GfK survey report this information for customer groups segmented according to their past switching behaviour. In particular, 15.8% of respondents who have never switched do not have a dual fuel tariff, compared to just 5.3% of those who have switched in the past year.[59] This suggests that the six large energy suppliers are likely to have a higher proportion of single fuel customers, and have higher per customer cost to serve as a consequence.

[55] See Condition 26 (Priority Services Register) of the Supply Licence Conditions.
[56] See page 7 of Ofgem, Vulnerable consumers in the retail energy market, 2017.
[57] See figure 2 of Ofgem, Vulnerable consumers in the retail energy market, 2017.
[58] See figure 3 of Ofgem, Vulnerable consumers in the retail energy market, 2017.
[59] See Q150(2) in https://www.ofgem.gov.uk/system/files/docs/2017/09/consumer_engagement_survey_2017_data_tables.xlsx

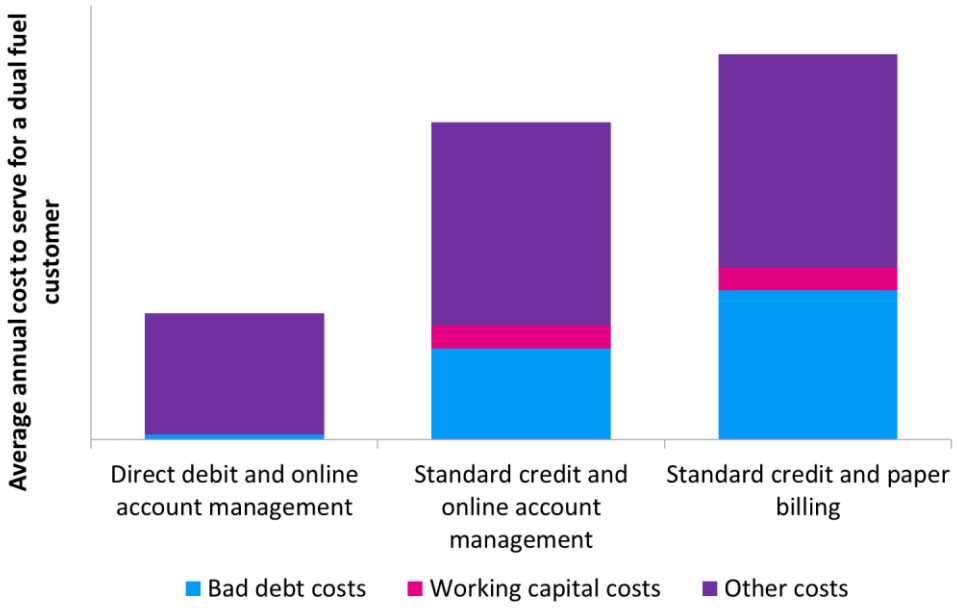
4.6 Analysis of data on ScottishPower's customers

This section uses customer-level data provided by ScottishPower to Baringa in order to demonstrate differences in cost to serve between different customer groups. The data provided included anonymised customer-level data on all of ScottishPower's customers as of March 2016. It also included company-level financial data for the 2016 financial year with a detailed breakdown of cost in ScottishPower's retail business that was segmented by customer payment method and fuel type.

We used characteristics of individual customers to assign cost. For some costs such as bad debt, assignment of company-level costs was direct, being based on debt write-offs for individual customers. For other costs, we used assumptions to assign cost to individual consumers. For example, a majority of customer service printing and postage cost was assigned to customers with paper billing. Further details of the data provided and our methodology are set out in Appendix C.

Having estimated cost to serve for individual customers, we calculated cost to serve for different customer groups. This is initially done based on characteristics of the energy supply contract that customers choose themselves, namely whether to pay by direct debit or standard credit, and also whether to opt for online account management or paper billing. Figure 4 shows estimated annual cost to serve for different segments of ScottishPower's dual fuel customers.

Figure 4 Cost to serve differences on the basis of billing and payment methods[60]



[60] The costs of government obligations, namely ECO and WHD, as well as marketing and sales costs and depreciation, were excluded from the calculations.

Our analysis shows that customers who pay by direct debit and manage their account online have the lowest cost to serve. The cost for customers who pay by standard credit and manage their account online is estimated to be at least £150 higher, comprising additional bad debt costs, working capital costs and additional 'other costs' (notably debt recovery agency costs, which are attributable to standard credit customers to a significantly greater extent than to direct debit customers).

There is a further difference in cost to serve between standard credit customers who manage their account online and those who receive paper bills. The bulk of the difference is accounted for by the cost of bad debt, which is calculated on the basis of debt write-off figures at customer level. It appears that paper billing is associated with other customer characteristics, most likely demographic, that are in turn associated with a significantly higher propensity to accumulate bad debt.

The customer characteristics explored above are all readily observable to suppliers when they take on a new customer and can therefore be used by suppliers to inform estimates of likely cost to serve. Absent regulatory restrictions or a policy by a supplier to cross-subsidise different customer groups, they can also be used to inform decisions on pricing for different types of product. However, there are other demographic factors that can have a significant effect on cost to serve and which are not captured by these characteristics.

Information can be obtained by suppliers on the likely demographic characteristics of existing and potential future customers. For example, the Mosaic classification by Experian allows customer demographics to be estimated on the basis of a customer's post code.[61] In addition to other customer characteristics described above, ScottishPower provided Baringa with a Mosaic classification of the customers in the anonymised dataset, split into the 15 core Mosaic groups.[62]

Figure 5 shows estimated cost to serve for the same customer groups as Figure 4, but also adds two additional groups that combine billing and payment method characteristics with demographic characteristics on the basis of the core Mosaic classification. In particular, the group with the lowest average cost to serve in Figure 4 is combined with the Mosaic group that is associated with the lowest cost to serve (Group 5), and the group with the highest cost to serve is combined with the Mosaic group that is associated with the highest cost to serve (Group 10). The purpose of this is to demonstrate the maximum degree of variation on the basis of customer characteristics that are observable to a supplier before they accept a new customer.

[61] See http://www.experian.co.uk/marketing-services/products/mosaic/mosaic-in-detail.html

[62] See http://www.experian.co.uk/assets/marketing-services/brochures/mosaic_uk_brochure.pdf for a description of the core groups. Note that the more precise segmentation into sub-groups was not available to Baringa.

Figure 5 Cost to serve differences on the basis of tariff and demographic classification

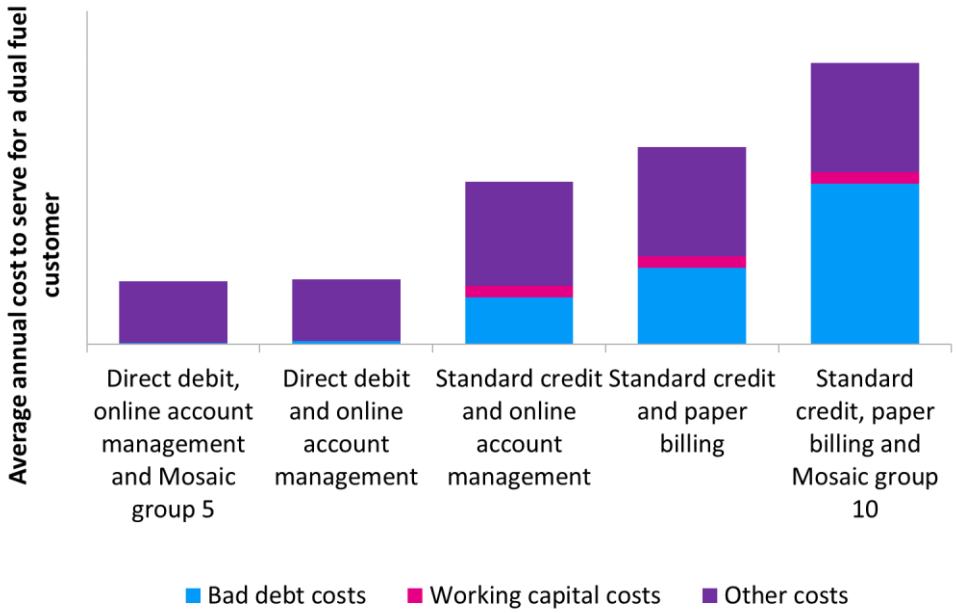


Figure 5 shows that cost to serve is only marginally lower than for the population of direct debit online customers when we focus on those characteristics and combine them with Mosaic Group 5 (lowest cost to serve). However, standard credit customers with paper billing who belong to Mosaic Group 10 (highest cost to serve) have annual average cost to serve that is around £150 higher still than the average for all standard credit customers with paper billing. All of this amount is accounted for by an increase in bad debt costs, estimates of which do not rely on Baringa assumptions on cost allocation. The difference in cost between the highest cost to serve and lowest cost to serve customer groups, after taking into account the Mosaic demographic categorisation, is very substantial.

It is perhaps unsurprising that Mosaic Group 10, which is estimated to have the highest cost to serve, is called 'Transient Renters'. A significant cost faced by suppliers can result from frequent changes in tenancy where the supplier of the previous tenant becomes the default supplier of the new tenant. For shorter tenancies, the probability of somebody accumulating debt on energy bills and moving on without repaying the debt is higher than for longer-term occupancies. Although the tenants of such properties may change supplier from time to time, the majority of tenants passing through would be expected to be disengaged and the churn rate for such premises is likely to be low. Large suppliers will have inherited a share of such premises from their incumbency days. Smaller suppliers by contrast will not have been in business long enough to have acquired a proportionate share of such premises through customer switching, and may therefore be expected to have significantly lower costs in this respect than large suppliers.

4.7 Conclusion

Overall, information from independent third-party sources and from ScottishPower's customer database consistently shows that average customer cost to serve is likely to differ significantly between different customer groups. These differences would be attributable to underlying differences in the characteristics of customers belonging to these respective groups.

There is also evidence that different suppliers can have significant differences in the makeup of their customer base, which can in turn lead to significant differences in average customer cost to serve between different suppliers. Since such differences are ultimately driven by differences in customer characteristics, they cannot be taken as evidence of inefficiency on the part of any individual suppliers or groups of suppliers.

5 Price cap and cost to serve differences

Differences in the cost of certain social and environmental obligations (ECO and WHD), where exempted suppliers do not face the same costs as obligated suppliers, are likely to result in distortions to competition. In particular, if obligated suppliers reflect such costs in their prices, they may lose customers to exempted suppliers, placing them at an unfair competitive disadvantage.

Differences in cost to serve between different groups of customers are a normal feature of many markets. One example of a market where such differences can be much larger than in the energy retail market is car insurance, where differences in the risk profile of different customers can mean that the cost to serve some high-risk customers may be a multiple of the cost to serve the lowest risk customers. Assuming that providers are able to estimate the risk profile of different customers, this feature does not in itself result in any distortions to competition because differences in cost to serve can be reflected in pricing by providers, although we note that energy suppliers may not always be able to do so.[63]

Cost to serve differences between different customer groups can result in distortions to competition when combined with a price cap on retail tariffs. A cap that is below the cost to serve of some customer groups would prevent normal pass-on of cost differences into prices, impair cost-reflectivity of tariffs, and imply a negative retail margins for some customer types. This would make it unattractive for most or all suppliers to compete for some types of higher-cost customer. Those customers may not see any meaningful competition and may not see the benefits of innovation that effective competition could bring. They would also have less cause to exercise choice of supplier, losing the habit of shopping around and making it more difficult to re-introduce competition in that market segment in the future.

Indeed, where the cap is below the cost to serve of some customer groups, suppliers would not be able to refuse to supply them and would therefore be forced to cross-subsidise them from other customer groups. This would impair suppliers' ability to compete for these other customer groups, meaning that competition would also be impaired in other segments of the market.

Finally, evidence from Section 4 on differences in cost to serve between the six large suppliers and smaller independent suppliers, particularly in terms of bad debt costs, demonstrates that using costs of the independent suppliers as a benchmark for setting the level of the cap is likely to miss significant drivers of supplier costs.[64] This could potentially result in a cap that is lower than the actual cost to serve for a significant proportion of the customer base of the six large suppliers. The

[63] Currently energy suppliers are able to differentiate customers by factors such as payment method, which are highly correlated with significant cost differences. However, unlike car insurance providers, energy suppliers may be constrained in their ability to differentiate customers by demographic factors (where such factors are correlated with cost to serve) in view of the implications of charging higher prices to potentially vulnerable customers.

[64] Using estimates of bad debt costs from the CMA and data from Ofgem's consumer survey, section 4.2 estimates that bad debt costs of the six large suppliers are between £4.5 and £9.4 per dual fuel customer per year higher than for the independent suppliers across all of their customers.

potential consequences of this are highlighted above, but could potentially be more severe if large parts of a supplier's customer base have a cost to serve that is above the level of the cap.

Appendix A Other obligations that apply only to larger suppliers

Appendix A provides a high-level description of a number of other licence obligations on large energy suppliers that may impose additional costs. We have not attempted to estimate the cost of these obligations because it is difficult to obtain reliable estimates.

Table 10 Obligation in addition to ECO and WHD that only apply to larger suppliers

Obligation[65]	Description	Threshold	Additional cost for larger suppliers?
Publication of Consolidated Segmental Statements (SLC 19A)[66]	Annual preparation, publication and independent audit of detailed accounts.	Big 6 energy suppliers[67]	Yes, but difficult to quantify over standard end of year costs.
Restricted Meter Remedy (SLC 22G)	Suppliers must comply with the obligation, including the requirement to make all single rate tariffs available on multi-rate meters. Confirmed until Dec 2020.	50,000+ customers	Yes, but difficult to quantify and exemption restricted to much smaller suppliers.
Interoperability of Advanced Domestic Meters (SLC 25B)	Relates to continued operation of advanced meters when customers transfer, including the condition that suppliers must offer new suppliers services to operate advanced meters.	250,000+ customers	Yes, but impacts a comparatively low number of domestic customers who switch with an advanced meter.
Obligations to offer a wide range of payment methods (SLC 27.1)	Suppliers must offer a wide range of payment options including cash and by prepayment meters.	50,000+ customers	Yes, but exemption restricted to much smaller suppliers. Effect of enabling smaller suppliers to choose customers with lower

65 https://epr.ofgem.gov.uk//Content/Documents/Electricity%20Supply%20Standard%20Licence%20Conditions%20Consolidated%20-%20Current%20Version.pdf

66 https://www.ofgem.gov.uk/sites/default/files/docs/2015/05/css_guidelines_jan_2015.pdf

67 The Big 6 collectively refers to Centrica, E.ON, EDF Energy, RWE npower, Scottish Power and SSE

Obligation[65]	Description	Threshold	Additional cost for larger suppliers?
			cost to serve may be more material.
Provision of optical labels (SLC 31A.3A)	Suppliers must provide optical labels on all bills and statements except final bills and bills that correspond to more than one MPAN.	50,000+ customers	Yes, but unlikely to be significant and exemption restricted to much smaller suppliers.
Green Deal Arrangements Agreement (GDAA) (SLC 38)[68]	Electricity supply licensees who are supplying, together with their affiliates, at least 250,000 customers are required to accede to the Green Deal Arrangements Agreement (GDAA).	250,000+ customers, smaller suppliers can join voluntarily	Yes, although difficult to quantify.
Smart metering consumer engagement (SLC 45)	Suppliers must establish, support and monitor the work of the Central Delivery Body. Small suppliers are exempted from meeting the costs of the Body with the exception of fixed operating costs.	250,000+ customers	Yes, CDB costs (excluding fixed operating costs) are £41m in 2018, equivalent to approximately £1.64 per dual fuel customer.[69]
Obligation to become a DCC User (SLC 48)	All suppliers must become DCC Users to comply with the Smart Energy Code. Larger suppliers are obligated to become users 6 months earlier.	250,000+ customers	Yes but likely to be limited as small suppliers are still obligated to become DCC Users.
Replacement of Smart Metering System (SMS) Apparatus (SLC 50)	Larger suppliers must take reasonable steps to ensure that replacement apparatus can be used as part of an SMS.	250,000+ customers	Yes
The CMA Database Remedy (SLC 56)[70]	Larger suppliers will need to provide data on a large subset of	250,000+ customers on	Primary financial cost likely to be outweighed by the financial

[68] http://gdorb.decc.gov.uk/admin/documents/Green%20Deal%20Arrangements%20Agreement.pdf
[69] Smart Energy GB Consumer Engagement Plan and Budget 2018, p.60
[70] https://www.ofgem.gov.uk/system/files/docs/2017/11/20171113_open_letter_cma_arr_remedy.pdf

Obligation[65]	Description	Threshold	Additional cost for larger suppliers?
	their customer base to an Ofgem database.	default tariffs for 3+ years	implications of losing more customers or increased cost of customer retention.

Appendix B Methodology to calculate WHD and ECO exemption values

B.1 Warm Homes Discount

The size of the WHD obligation on individual obligated suppliers is assumed to be proportional to their customer numbers. In order to calculate the value of the obligation at a customer level, we divide the £329m WHD SY7 scheme value by the total estimated number of customers of obligated suppliers in Q4 2016 (26,491,884).

The value of the exemption for a fully exempted supplier at a per-customer level is the same as the size of the obligation on a fully obligated supplier. The value of the exemption for a fully obligated but growing supplier is the difference between the size of their obligation on the basis of their customer numbers as of 31 Dec 2016 and the size of their obligation on the basis of the average customer numbers for the relevant delivery period. To calculate the exemption value at a company level, we multiply the exemption value on a per customer basis by the number of customers supplied by the relevant supplier.

The individual WHD rebate is identical between scheme years and the target budgets between scheme years are very similar. We therefore consider this approach provides a reasonable approximation for the likely ongoing costs of the scheme.

B.2 ECO

For companies that are fully obligated under ECO2t, the cost of the different components of the obligation, which includes CERO, HHRCO and Administrative costs, is calculated on the basis of their total reported value and the estimated electricity and gas supply volumes for the relevant companies in 2016.

Table 11 Projected total value of ECO components (Apr 2017 – Mar 2018)

CERO	CSCO	HHCRO	Admin
£167,436,800	£0	£397,662,400	£83,718,400

Since the obligation is determined on the basis of supplied electricity and gas volumes, all customers are assumed to be on a dual fuel tariff and consuming electricity and gas at a ratio of 1 to 5 in kWh terms. Average annual electricity and gas consumption per customer are assumed to be 3.52 MWh and 17.6 MWh respectively. This is based on the average reported electricity supply volume in 2016.

Suppliers are assumed to be exempt from ECO obligations in our analysis if the total amount of electricity supplied by them in 2016 is less than 400 GWh. They are assumed to be partially obligated if the total amount of electricity supplied by them in 2016 is between 400 GWh and 800 GWh. Implicitly, each company is also assumed to supply between 2000 GWh and 4000 GWh of gas proportionately with its electricity supply using a 1 to 5 ratio in kWh terms. For these suppliers, the value of the partial exemption under the ECO obligation is calculated as:

$$(A - (A - B) \times 2) \times T$$

Where *A* is the volume of electricity (in GWh) supplied by the company in 2016, *B* is 400 GWh, and *T* is the cost of the ECO obligation per unit of obligated volume of electricity supply.

B.3 Supplier archetypes

In Section 3.2.2, we described three generic smaller suppliers to represent the spectrum of partly or fully exempted competitors to the six large suppliers to estimate the value of exemptions and analyse the effect of the exemptions on competition in the retail market. Table 12 sets out the assumed electricity supplied and customer numbers used to calculate the static and dynamic value of the WHD and ECO exemptions for each of the archetype suppliers.

Table 12 Generic supplier archetypes[71]

	2016 electricity supplied (GWh)	2017 electricity supplied (GWh)	YE2016 Customers[72]	YE2017 Customers
Company 1: New entrant growing at 30% annually – fully exempt	124	161	40,000	52,000
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	474	592	150,000	187,500
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	805	966	250,000	300,000

[71] Average electricity consumption per customer is calculated on the basis of total domestic electricity supply volume and customer numbers for 2016 as reported by Ofgem. 2016 and 2017 electricity supply volumes for company archetypes are then calculated on the basis of the growth profile of customer numbers for each company.

[72] All customers are assumed to be on dual fuel tariffs.

B.4 Static and dynamic values of exemptions

Suppliers can be partially or fully exempt from the ECO and WHD if they are below the relevant thresholds for customer and supply numbers. However, obligation costs for a growing supplier can also be lower on a per customer basis than for a supplier with a static or declining customer base because their current customer and supply numbers are greater than those on which the size of their WHD and ECO obligations is determined.

We calculate these two elements of exemption value separately. The value of WHD and ECO exemptions on a 'static' basis means that the counterfactual against which the actual obligation costs of companies are compared is one where there are no exemption thresholds but the size of the obligation on each company is based on lagged customer and supply numbers as is done under the current arrangements. Table 13 shows the total value of each exemption for each archetype supplier on a company basis and Table 14 does so on a per customer basis.

Table 13 Static value of exemptions on a company basis

	WHD	ECO2	Total
Company 1: New entrant growing at 30% annually – fully exempt	£455,825	£497,722	£953,547
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£0	£1,310,491	£1,310,491
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£0	£0	£0

a

Table 14 Static value of exemptions on a per customer basis

	WHD	ECO2	Total	Total as % of cheapest available dual fuel tariff
Company 1: New entrant growing at 30% annually – fully exempt	£10.18	£15.53	£25.71	3.1%
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£0.00	£11.36	£11.36	1.4%
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£0.00	£0.00	£0.00	0.0%

The estimated 'dynamic' value of exemptions is calculated as the difference between the obligation value that suppliers actually face relative to the value that would apply if there were no exemptions for smaller suppliers and obligations were based on current rather than lagged customer numbers.[73] This approach is the basis of our estimates of exemption values in Section 3.2.

Table 15 shows the total value of each exemption for each archetype supplier on a company basis and Table 16 does so on a per customer basis.

Table 15 Dynamic value of exemptions on a company basis

	WHD	ECO2	Total
Company 1: New entrant growing at 30% annually – fully exempt	£556,246	£740,113	£1,296,359
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£314,670	£2,072,650	£2,387,320
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£420,755	£1,023,163	£1,443,919

[73] Since the value of exemptions is calculated on a forward-looking basis for the entire ECO2t delivery period (18 months from April 2017 – September 2018) 'current' customer numbers are based on projected customer numbers for this period.

Table 16 Dynamic value of exemptions on a per customer basis

	WHD	ECO2	Total	Total as % of cheapest available dual fuel tariff
Company 1: New entrant growing at 30% annually – fully exempt	£12.96	£23.09	£36.05	4.4%
Company 2: Smaller mid-tier supplier growing at 25% annually – partly obligated	£2.39	£17.97	£20.36	2.5%
Company 3: Larger mid-tier supplier growing at 20% annually – fully obligated	£1.97	£5.55	£7.53	0.9%

Appendix C Analysis of ScottishPower data

The customer data provided to Baringa by ScottishPower is set out in Table 17 below.

Table 17 Customer data provided by ScottishPower

Variable	Description
ID	Unique identifier for a customer supplied with one or more fuels.
Single or dual fuel	Identifies whether a customer is on a single or dual fuel tariff.
Payment method	Identifies whether a customer pays by direct debit, pre-payment or by standard credit.[74]
Billing type	Identifies whether a customer receives a paper bill or is billed online.
Tenure	Number of days that a customer has been with ScottishPower.
Meter type	Identifies whether a customer has a smart or a traditional meter.
Written off value	Outstanding balance on customer account against which a provision has been made for bad debt write-off.
Unpaid value	Outstanding balance on customer account (positive or negative).
Weighted unpaid days	Average number of debtor/creditor days for outstanding amounts – weighted by the size of each invoice that makes up the total unpaid amount for each customer.

Table 18 sets out the company-level financial data for ScottishPower's retail business that was provided to Baringa for FY2016. For each cost item, we set out the rules according to which the costs were mapped onto individual customers, using customer characteristics and other data from the customer-level dataset. Since the costs were split into power and gas, as well as by payment method (direct debit, pre-payment and by standard credit), allocation rules are sensitive to these characteristics, with each allocation being made separately for customer groups on different payment methods.

[74] Customers identified as 'other' were assumed to pay by standard credit.

Table 18 Financial data and cost allocation rules[75]

Cost item	Rule for allocation to individual customers
Telephone services - Front office activity	Cost assigned to power is allocated between single and dual fuel customers with single fuel customers having a 50% higher allocation of cost than dual fuel customers.[76] Cost assigned to gas allocated across dual fuel customers on an equal basis.
Reading and metering services	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Billing	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Printing and Postage (including One Corporate)	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis. Within each of these groups, all of the cost is allocated to customers with paper billing.
Other backoffice processes:	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Prepayment infrastructure costs	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.[77]
Debt recovery agencies	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.[78]

[75] Note that ScottishPower reported costs separately across power and gas, and also segmented costs according to payment method. The allocation rules in this table were applied separately for each payment type.
[76] Greater phone services cost allocation is made to single fuel customers on the basis of them being more likely to be older legacy customers who are used to dealing with their energy supplier over the phone.
[77] Note that all of this cost is assigned to pre-payment customers in the figures provided by ScottishPower to Baringa.
[78] Note that this cost is assigned between standard credit and direct debit customers in the figures provided by ScottishPower to Baringa.

Cost item	Rule for allocation to individual customers
Bad debt costs	Total bad debt costs by payment method and for power and gas are assigned to individual customers using amount written off as reported at customer level as a weighting to ensure that sum of individual amounts reconcile to the total.
Compensation payments & complaints	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
New Connections	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
CRM	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Personnel and administration external services (support)	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Other Costs	Cost assigned to power is allocated equally on a per-customer basis between single and dual fuel customers. Cost assigned to gas allocated across dual fuel customers on an equal basis.
Working capital costs	Working capital cost could not be calculated from data provided by ScottishPower. Hence, working capital cost was assumed to be zero for direct debit accounts and a cost of £9 for electricity and £12 for gas were used for standard credit accounts based on estimates used by the CMA for the differential in cost to serve between direct debit and standard credit customers. This is a conservative estimate since the CMA used these estimates for the bottom of the range of cost to serve differentials between direct debit and standard credit customers.