Appendix 8.2: Cost pass-through

Contents

Introduction

1. This appendix sets out our analysis of the relationship between domestic energy prices and costs. The purpose of this analysis is to describe the way in which costs to the domestic retail supply of energy are passed through to prices.

2. This appendix is structured as follows:

   (a) First, we present a description of the data and the results (paragraphs 3 to 35).

   (b) Second, we summarise the parties' responses to Appendix 7.2 of the Provisional Findings report.

   (c) Annex A sets out further details of our cost benchmark methodology.

   (d) Annex B presents additional results.

Analysis of forward looking cost and prices

3. This part of our analysis assesses firm pricing behaviour through the comparison of price movements with movements in expected marginal costs. We observe how suppliers have changed their prices at particular points in time, and assess the extent to which these price changes were driven by the information the industry or the suppliers had at that point in time about the costs of energy supply.

4. We recognise that expected costs are only one of several factors suppliers take into account when setting prices.[1] We also acknowledge that there have

[1] There may be significant menu costs (costs of changing prices, such as the costs of updating the billing systems, informing customers, or reputational costs)

been a number of regulatory changes throughout the period of analysis, which may have affected the way suppliers price their products. This analysis does not seek to form a view of how each of these factors interact.

Approach

5. The decisions to change SVT prices or launch new non-standard tariffs (NSTs) at certain prices are informed by suppliers' expectations of future costs (both energy and other direct costs, such as transmission or policy). Intuitively, this is because a price quoted in a contract today will apply to energy delivered to a customer over a period of time (until the customer switches, until the price is changed, or until a contract expires).[2]

6. An energy supplier's expectations of its costs of delivering a certain amount of energy at a point in time in the future consist of:

   (a) the cost that the supplier has already incurred for future delivery by purchasing some of the expected volume in advance (the 'closed' position); and

   (b) the cost that the supplier expects to incur in purchasing the remaining expected volume (the 'open' position). These expectations are informed by forward prices of future products.

7. In principle, only the energy cost in 6(b) should matter to a profit maximising supplier when setting its prices, regardless of the cost of the energy that has already been purchased (although the cost in 6(a) will affect its profits).[3]

8. We consider that forward prices of future energy products are a good benchmark of the expected marginal wholesale cost as:

   (a) forward gas and electricity prices measure the expected cost of supplying energy to a newly acquired domestic customer in the future; and

   (b) forward prices also measure the expected value, or opportunity cost, at a point in time, of the energy the supplier already procured in the past for future delivery. That is, if a supplier lost a domestic customer and had to sell the energy it previously purchased for that customer back to the

[2] We also note that a price change for the SVT can only be implemented a month after it was announced. This means that the current (spot) price of energy should have no relevance to the pricing decision at a point in time. This is to some extent also true for NSTs, as switching to a NST does not take effect instantaneously.
[3] See, for example, Nakamura, E and Zerom, D (2010), *Accounting for Incomplete Pass-Through*, who discuss the irrelevance of hedging contracts to marginal costs in the context of the coffee market.

market, the price at which this energy could be sold is the forward price in the market at that point in time.

9. In practice, however, we understand that energy suppliers also take account of their hedging contracts when setting domestic retail prices. We therefore consider a range of measures of expected costs.

Measures of expectations of energy costs

Forward-looking opportunity cost benchmarks

10. We constructed forward-looking industry cost benchmarks for the period between 2004 and March 2016. These benchmarks approximate the economic opportunity cost and do not make any assumptions about hedging. The benchmarks use daily electricity and gas forward price assessments from ICIS[4] for future energy products traded for delivery in the month(s), quarter(s) and season(s). We constructed five versions of this benchmark:[5]

    (a) A one-year wholesale cost benchmark. This is an index that, on each day, evaluates the expected cost of delivering gas and electricity for a dual fuel domestic customer with typical consumption[6] over the next year. The index is a weighted average of the prices of the relevant future products (month(s), quarter(s) and season(s))[7] that cover the next one year of delivery. Each product's prices are weighted by the length of the period that product covers within the year (for example, the price of the season-ahead product determines one half of next year's cost).[8] Additionally, we apply seasonal consumption weights for electricity (winter and summer)[9] and quarterly consumption weights for gas. We aggregate the daily index to monthly values, taking a simple average of all daily index values within a month.[10]

    (b) A 1-month wholesale cost benchmark. This index is constructed as simple average of month-ahead products.

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[4] ICIS is a market information provider.
[5] Each of the wholesale cost benchmarks also includes a set of assumptions for the costs of transmission losses and shaping (see Annex A).
[6] We use Ofgem typical domestic consumption values for medium customers in place during 1 January 2014 and 1 September 2015: 3200 kwh/year for electricity and 13500 kwh/year for gas. See Ofgem's decision letter.
[7] We use the ICIS price assessments for each of the products.
[8] For electricity, we construct this index for baseload and peak product prices separately, and then compute a weighted average electricity index (assuming that 70% of the electricity consumed is baseload, and 30% are peak products).
[9] Winter and summer products are both six-month seasonal products. We use fixed seasonal consumption weights throughout the period. The weights are based on energy consumption figures between 2004 and 2014, as published by DECC. See DECC's publication page.
[10] See Annex A for illustrative diagrams showing how the one-year cost benchmark was calculated.

(c) A 6-month wholesale cost benchmark. This is constructed similarly to 10(a) but covers the next 6 month of delivery.

(d) An 18-month wholesale cost benchmark. This index is constructed similarly to 10(a) but covers the next 18 months of delivery.

(e) A two-year wholesale cost benchmark. This index is constructed similarly to 10(a) but covers the next two years of delivery.

Ofgem's forward-looking Supply Market Indicator

11. Ofgem has constructed a forward-looking expected cost measure (the Supply Market Indicator (SMI)), which is a forecast of the cost of delivering energy over the next 12 months, and assumes a certain purchasing (hedging) strategy.[11] The central stylised hedging strategy embedded in the SMI assumes that energy for delivery in a particular month in the future is bought at equal amounts throughout the 18 months leading up to that month. Therefore, the calculation of the SMI energy component for the next season is an average of that season product's traded price over the previous 18 months. For the season after that, the calculation takes account of the last 12 months' traded prices.

12. We note that Ofgem SMI was suspended in May 2015.

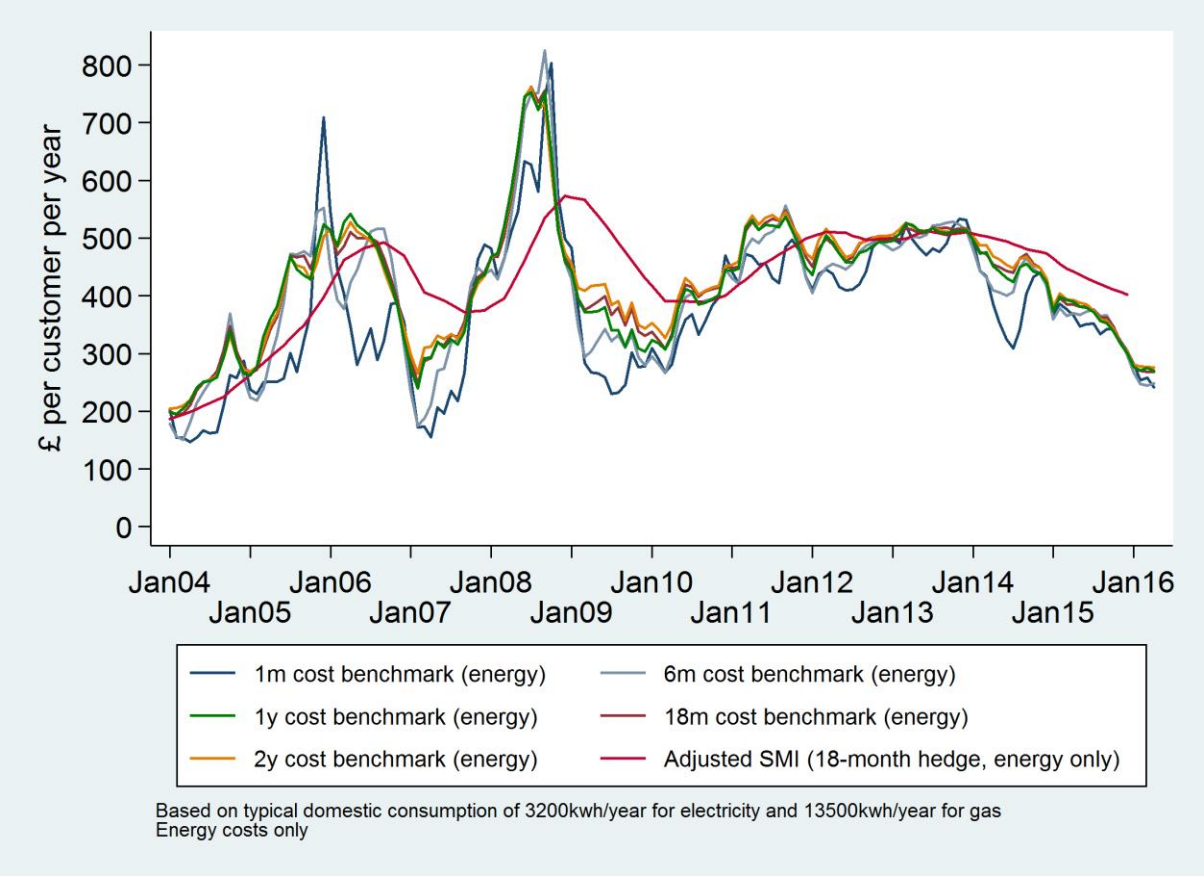
Comparison of industry-level energy cost benchmarks

13. The SMI and the forward-looking benchmarks above are cost forecasts (expectations), and both the SMI and the one-year cost benchmark are measuring costs for the same period of delivery (the following 12 months). The difference between the two types of measures is in the information that is used to construct the forecast: the cost benchmarks use only the market information available in the month when the forecast is made as if the supplier were to purchase all of the following year's expected volume for that customer in that month, whereas the SMI also uses price information from earlier months assuming that the supplier already purchased some of that expected volume in the past (see Annex A for an illustrative example).

14. Figure 1 illustrates the movements of the cost benchmarks and the Ofgem SMI in the period between January 2004 and March 2016.

[11] See Ofgem's SMI methodology.

Figure 1: Forward-looking energy cost benchmarks for a dual fuel, typical consumption customer



Source: CMA analysis of data collected from ICIS and Ofgem.

15. We observe from Figure 1 that the 1-year, 18-month and 2-year forward-looking benchmarks co-move closely over time and in most periods there is no material difference. The 1-month and 6-month index co-move with other forward-looking indices but they are more volatile. The SMI energy cost is much smoother than the other benchmarks, and expected wholesale cost changes appear with a lag because of the hedging assumption.

16. We focus in our analysis primarily on the one-year expected cost benchmark. We consider that this benchmark is directly relevant for an analysis of pass-through to short-term[12], fixed-rate tariffs. We also consider it to be a relevant benchmark for the analysis of SVT prices and prices of NSTs with contracts of different lengths because:

    (a) we consider that domestic customers are not typically expected to switch more frequently than this period;

[12] Defined here as tariffs with a contract (at the date of first launch) of up to 24 months.

(b) we understand that the Six Large Energy Firms take account of energy cost forecasts of at least such length when setting their SVT prices; and

(c) the benchmarks with different lengths of forecast periods are not materially different from the one-year benchmark. For example, we observe that the movements of the 18-month and two-year indices are not materially different from the movements of the one-year index.

Firm-level expected wholesale cost measures

17. We collected data on the Six Large Energy Firms' own energy cost forecasts. The data that was available differed between the suppliers with respect to the time period, frequency and granularity (for example, availability of cost forecasts by product). For the majority of the Six Large Energy Firms the data we collected takes the form of matrices, where for each month of forecasting we have the expected cost per unit of electricity or gas for each of the following 24 months.[13] The expected cost per unit is defined as a weighted average of the open and closed (hedged) positions. We have also collected data on volume forecasts in the same format.

18. We use the suppliers' cost forecasts for the next 12 months, each month weighted by the expected volumes in that month relative to the expected volumes for the year, to construct, in each month, an expected cost per unit of electricity and gas over the next year. We then use these figures to calculate an index of an expected cost of supplying energy to a typical dual fuel domestic customer over the next year.[14]

19. The data available to us from the Six Large Energy Firms differed in how certain cost items relating to the purchasing of energy were accounted for. For example, EDF Energy did not hold separate data on BSUoS costs and this was included in the wholesale cost; E.ON's wholesale costs include balancing and some transmission and distribution costs; Centrica's wholesale costs also include a contribution to brokerage and hedging-related operating costs. For this reason we do not consider the levels of the reported wholesale costs to be comparable across the suppliers, although the differences in these definitions are likely to be small in monetary terms.

[13] The data we received from SSE was only available in certain times of the year and not for the full 24 month forecast period.
[14] As the cost forecast data was not always fully available for delivery months further than the next 12, we did not calculate expected cost indices of different lengths. However, for the reasons set out in paragraph 16 we expect the one-year forecast to adequately approximate the cost that suppliers were factoring into their pricing decisions.

Measures of expectations of other direct costs

20. We consider the following cost categories to also be relevant to domestic retail pricing (we refer to these as 'other costs' throughout the analysis):[15]

    (a) Transmission and distribution costs.

    (b) BSUoS (electricity only).

    (c) Environmental and social obligations (or policy costs).

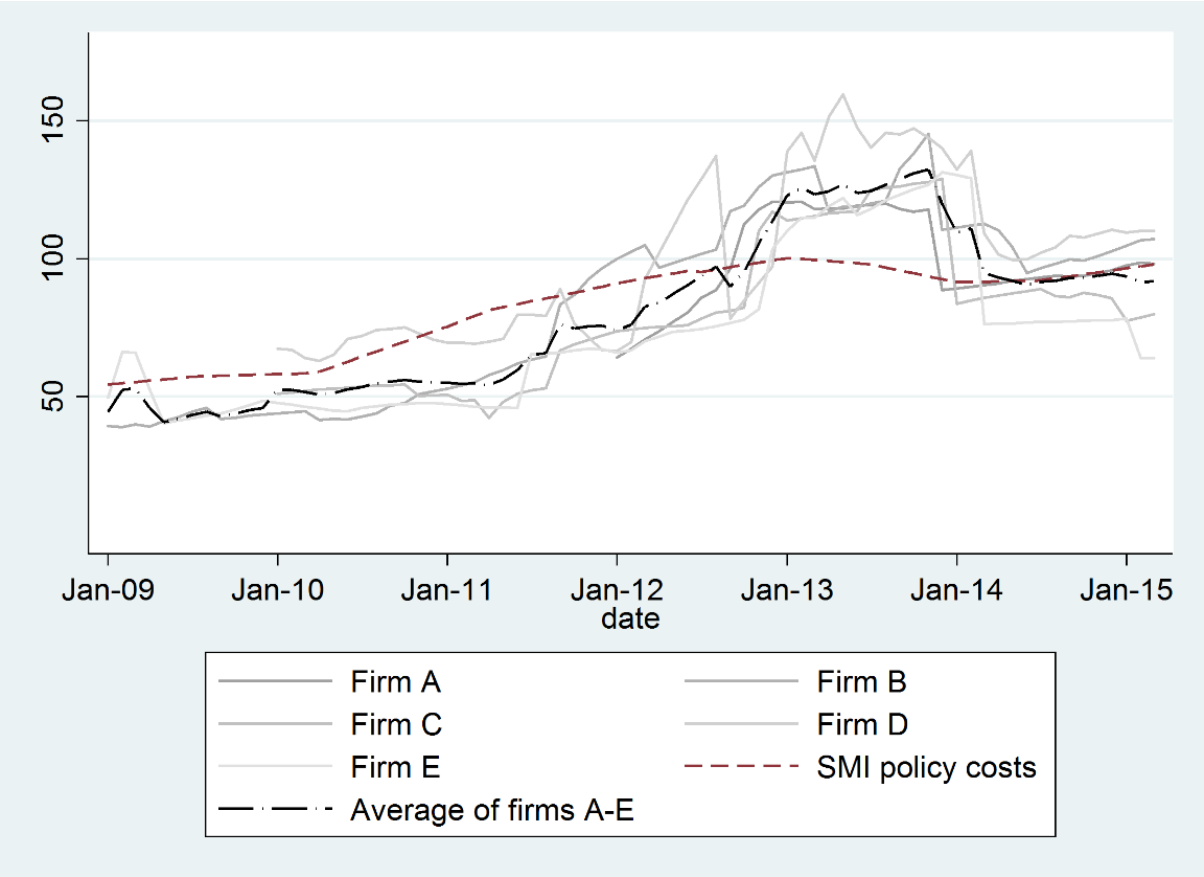
21. Ofgem estimates these costs for the SMI using publicly available information.[16] We adapted the Ofgem measures to reflect the latest typical domestic consumption values.[17] The environmental and social obligation costs included in these measures are ROCs, FITs, ECO and the Warm Home Discount Scheme.

22. We do not include operational costs in our analysis, as these are indirect costs that should not be relevant to pricing in the short term.

23. Figure 2 presents the evolution of the forecasts of policy costs over time using forecast data submitted by five of the Six Large Energy Firms for the period 2009 to March 2015.[18] We note that the method of construction of these forecasts differed between the suppliers; in particular, these forecasts are produced at different frequencies by suppliers; E.ON included ROC costs in the wholesale costs and not the policy costs.

[15] While there may be other costs (such as metering) that may be marginal to the number of customer accounts, we understand that these are not material in magnitude for the purposes of our analysis, and do not vary materially over shorter periods of time.
[16] See Ofgem's SMI methodology, which lists the data sources and assumptions used to construct the measures of these costs.
[17] We note that Ofgem flagged that this data may be less reliable, in particular with respect to network costs, prior to 2007.
[18] It was not available for SSE in the format requested.

Figure 2: Environmental and social obligation cost forecasts



Source: CMA analysis of data collected from Ofgem and five of the Six Large Energy Firms.
Note: [✂]

24. We observe that the SMI measure does not capture the sharp rise in expected policy costs in 2013, but it overstates expected policy costs before 2013. It appears to be a fairly good reflection of the suppliers' average forecasts from early 2014.

25. Centrica said that the Ofgem SMI cost benchmark is not representative of the costs incurred by energy suppliers. Whilst we recognise that the SMI policy cost measures depart at times from the actual cost expectations the industry had, this error in measurement is not material as a proportion of total direct costs (see Figure 1 in Annex B, which shows the forward-looking index with either the SMI or firm-level average policy cost forecasts assumed). We therefore use the Ofgem measures of policy costs for the remainder of this analysis, as this allows us to look at the full period from 2004.

Measures of prices

26. We collected data on two sets of prices: the SVT prices and NST prices. Both sets of price measures are based on the annual dual fuel bill for a typical

(medium) customer[19] paying by direct debit, on average (simple average) across the regions.

Standard variable tariff prices

27. We considered the following measures of SVT prices:

    (a) A simple average of the Six Large Energy Firms' SVT bills (for a dual fuel domestic customer with typical consumption values).

    (b) A weighted average of the Six Large Energy Firms' SVT bills, weighted by market shares.

    (c) A weighted average of the Six Large Energy Firms' SVT bills using 'importance weights' (eg constant weight for each supplier across the period of analysis).

28. We consider the simple average in 27(a) to be informative and relevant for this part of the analysis because the movements of this measure over time reflect genuine price changes implemented by the suppliers in response to changes in costs or other factors in the market. In contrast, a weighted average such as the one in 27(b) can change over time because of changes in the mix of customer types or market shares, even if suppliers do not change the prices they charge to each of their domestic customers subscribed to the SVT. Similarly, adopting weights as in 27(c) would produce average SVT bills that would be sensitive to the weight given to one supplier relative to another which could ultimately mask or distort the response of prices to cost movements.

NST prices

29. The data we collected on NST prices is a list of NSTs launched by the Six Large Energy Firms and four mid-tier firms[20] between 2006 and March 2016 and, for each tariff, the date the tariff was introduced into the market, the date it was withdrawn, and the dual fuel bill for a domestic customer with typical consumption, paying by direct debit.[21]

30. Figure 3 plots NSTs and average SVT in the data. This includes NSTs offered by the Six Large Energy Firms (including SSE and Centrica's white label tariffs launched under Marks & Spencer and Sainsbury's Energy respectively)

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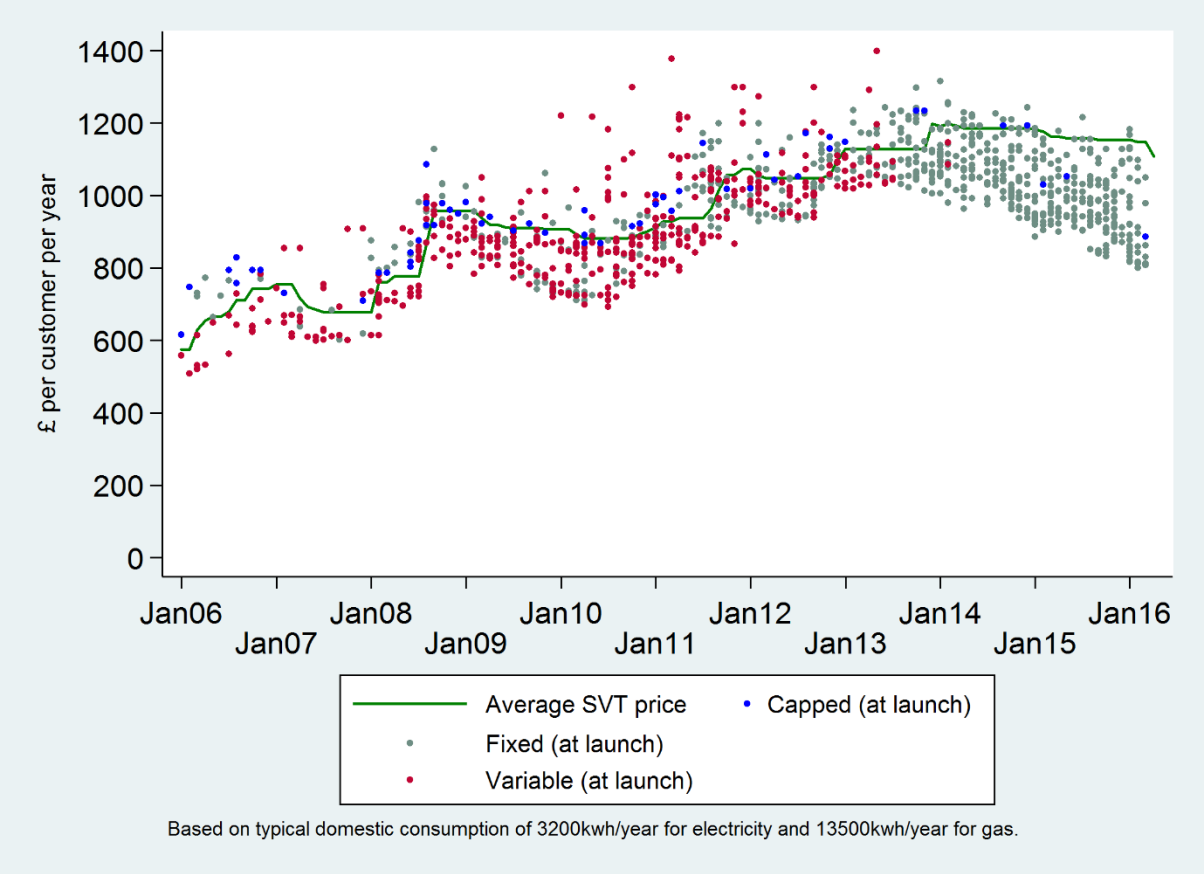
[19] As per Ofgem's current definition of a medium customer. See Ofgem's decision letter.
[20] Co-op Energy, First Utility, Ovo Energy and Utility Warehouse.
[21] We note that the dataset does not include the following tariffs: (i) economy7 tariffs, (ii) collective switching tariffs, (iii) deemed tariffs, (iv) developer tariffs and (v) tariffs available to specific set of customers (eg: special offers)

and the four mid-tier suppliers (Ovo Energy, Utility Warehouse, First Utility and Co-operative Energy). The dots represent the annual dual fuel bill of a typical domestic customer subscribing to the particular NST at launch. We note that some data points between 2010 and mid-2013 appear exceptionally high; these were tariffs offered by First Utility, who told us that they did not hold parts of the data.

Figure 3: Non-standard tariffs at launch and average SVT price of the Six Large Energy Firms (including white labels) and mid-tier suppliers (based on the annual bill for a dual fuel, direct debit, typical consumption customer)



Source: CMA analysis of data collected from the Six Large Energy Firms, the four mid-tier suppliers, Ofgem and ICIS.

31. We observe from Figure 3 that the majority of NSTs were launched at a discount to the SVT. This discount appears to have varied over the period. We also observed that following the introduction of the RMR rules all NSTs are fixed-rate tariffs.

Results

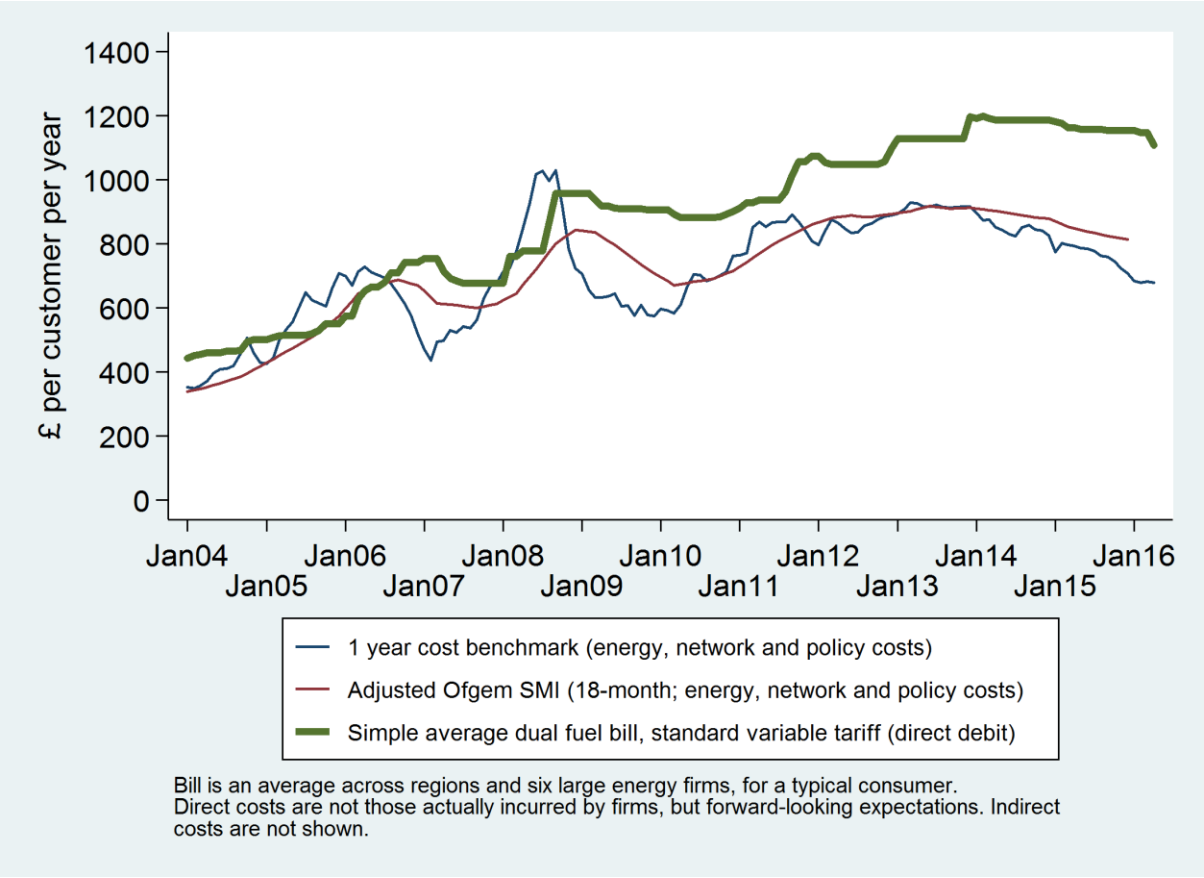
32. Figure 4 presents movements in the one-year expected cost benchmark and average SVT prices between 2004 and March 2016. We observe the following:

(a) SVT price changes have generally been less frequent and smaller in magnitude than the movements in the expected costs.

(b) SVT price changes lag expected cost changes. For example, expected cost rises in 2008 and 2011 were followed by price rises a few months later; likewise, price reductions were behind expected cost reductions in 2007, 2009 and 2014 to 2016.

(c) The reduction in costs are not passed through into commensurate reduction of SVT prices. In fact, the gap between the one-year cost benchmark and the average SVT widens over time, and particularly from around 2012 onwards.

Figure 4: Average SVT price (based on the annual bill for a dual fuel direct debit typical consumption) and a forward-looking industry-level benchmark of direct costs



Source: CMA analysis of data collected from the Six Large Energy Firms, Ofgem and ICIS.

33. Figure 5 illustrates the evolution of the range of short-term, fixed-rate tariffs[22] that were on sale at particular points in time, the average and minimum SVT

[22] Defined here as fixed-term, fixed-price tariffs with a contract (at the date of first launch) of up to 24 months. The data presented here includes tariffs launched by the Six Large Energy Firms, Ovo Energy, Utility Warehouse and Co-op Energy.

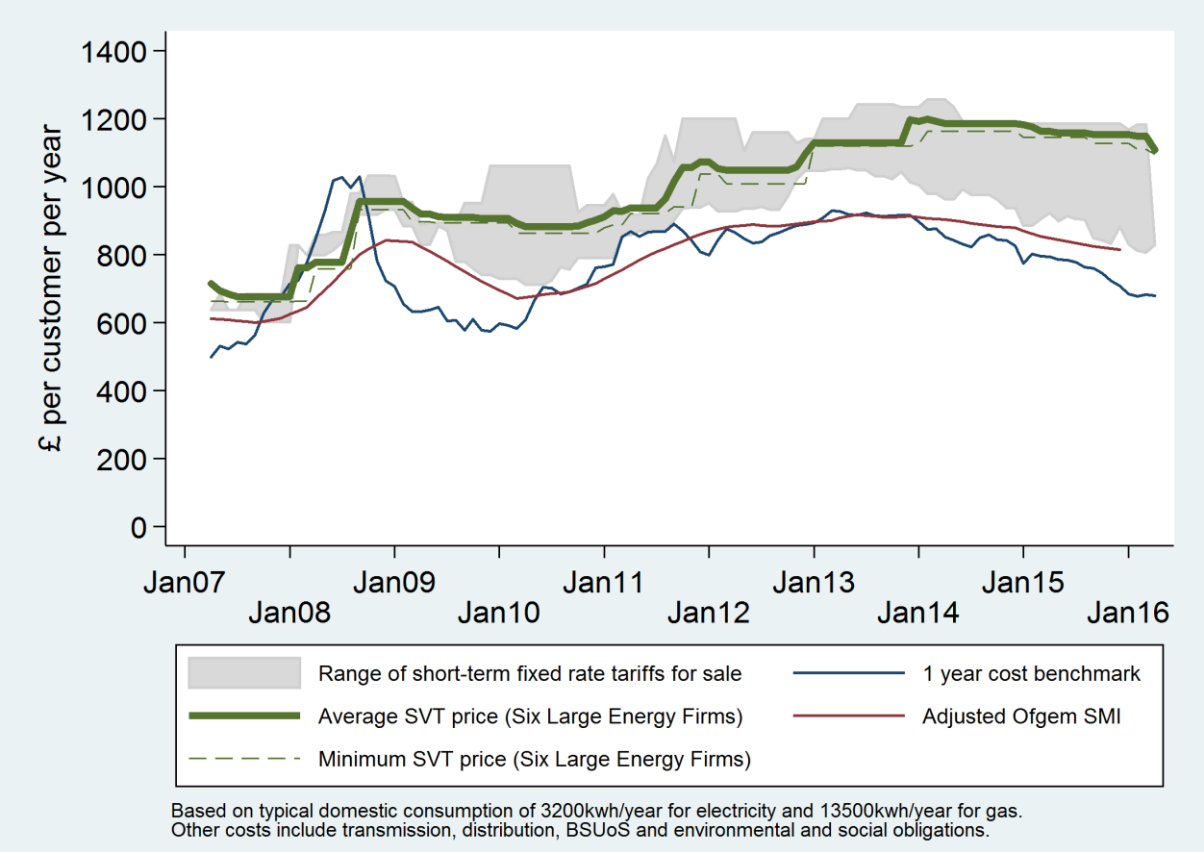
price and the forward-looking cost benchmarks. We observe the following with respect to short-term fixed-rate tariffs:

(a) They tend to be cheaper than the average SVT throughout the period, although there have been some tariffs offered at a premium.

(b) The price of short-term fixed-rate tariffs that are available at a point in time tends to change more frequently than the SVT price. This happens through the frequent introduction and withdrawal of tariffs.

(c) The cheaper tariffs appear to have followed expected costs more closely than the SVT price has. For example, the short-term fixed-rate price decreased more than the SVT price during the period following the cost reduction in 2009, and followed more closely the recent cost reduction in 2014 to 2016.

Figure 5: The range of short-term fixed-rate tariffs on sale, average and lowest SVT price and a forward-looking industry-level benchmark of direct costs (based on direct debit, typical consumption customer)[23]

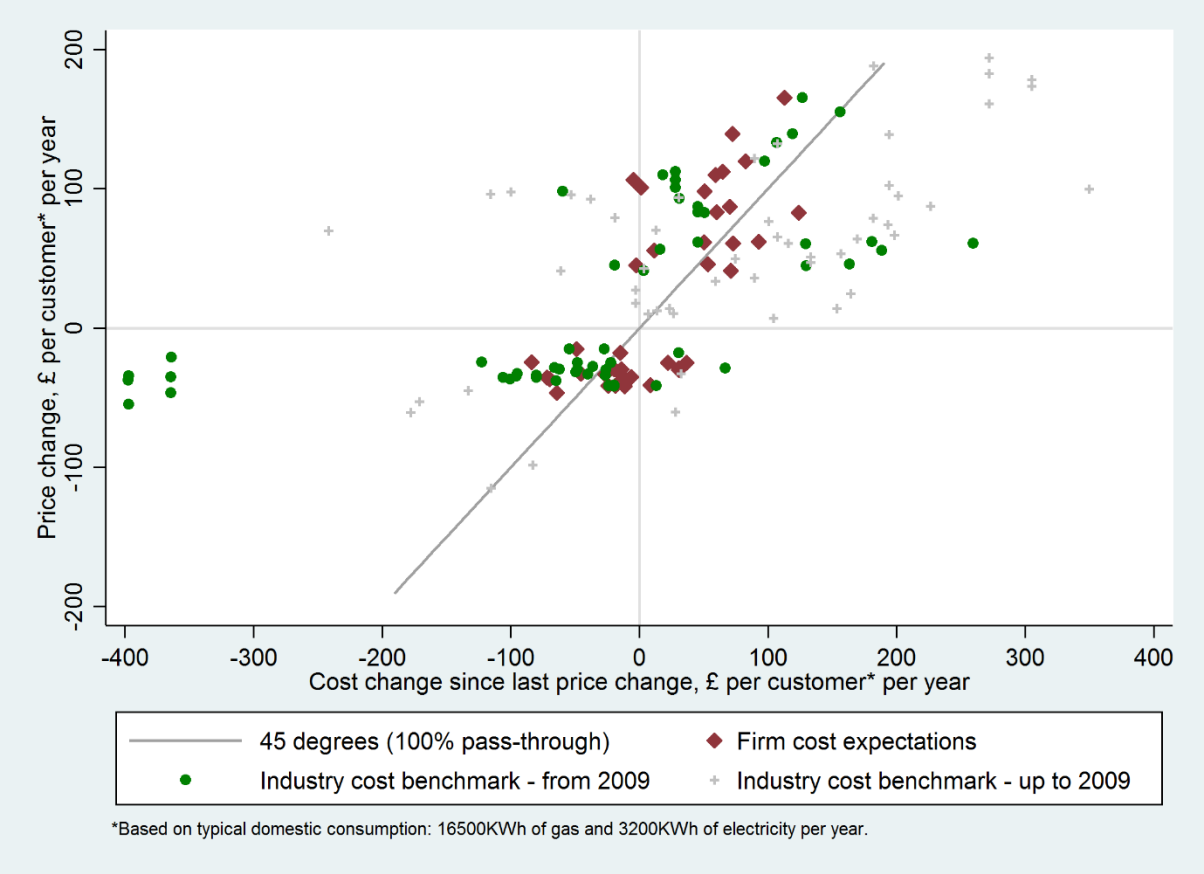


Source: CMA analysis of data collected from the Six Large Energy Firms, Co-op Energy, Ovo Energy, Utility Warehouse, Ofgem and ICIS.

[23] The range of short-term, fixed-rate tariffs includes most NSTs with a contract of up to 24 months, launched by the Six Large Energy Firms (including white labels) and the four mid-tier suppliers. The SVT price includes the Six Large Energy Firms.

34. Since SVT prices change infrequently, we also conduct a comparison of price and cost changes that disregards the periods where prices were not changing. Figure 6 shows how the size of the SVT price change correlates with the size of the net cost change that accumulated since the last time the firm changed its price. The figure includes the Six Large Energy Firms' SVTs. The green and grey markers in the figure map each firm's price change against the net cumulative cost change as measured by the one-year forward cost benchmark; the red diamonds map each firm's price change against the net cumulative change in its own cost forecast, which includes a hedged energy cost position. Firm-level cost forecasts were only available from 2009 or later.

Figure 6: Size of SVT price changes (firm-level) against the change in expected costs (one-year cost benchmark) since the last price change the firm made



Source: CMA analysis of data collected from the Six Large Energy Firms, Ofgem and ICIS.

35. We make the following observations based on Figure 6:

(a) All price rises since 2009 have been larger than approximately £40; in contrast, there have been price reductions of a relatively small magnitude. This may indicate a difference in the menu costs associated with increasing and decreasing the SVT price.

(b) There have been price rises that were larger than the increase in the firms' expected costs; however, there have also been price reductions of a magnitude larger than the associated expected cost reduction. This is consistent with suppliers hedging their costs and smoothing the SVT price.

Parties' views

36. The Six Large Energy Firms submitted responses to the Provisional Findings report commenting on the methodology and interpretation of our analysis. This section summarises the parties' views and our responses.

Interpretation

37. The parties made the following arguments:

(a) The one-year forward cost benchmark was an unrealistic measure of costs because it ignored price smoothing and the way suppliers purchased energy over time (Centrica), and was not an appropriate benchmark for both the SVTs and NSTs with different contract lengths because the costs of procuring energy differed between such tariffs (RWE).

(b) Centrica accepted the CMA's conclusion that over the entire period the majority of NSTs were launched at a discount to the SVT. Nonetheless it pointed out that a substantial proportion of NSTs (and in some years a majority) were launched at a premium to SVT reflecting the differing role that different tariff types play in the market as forward commodity costs vary.[24]

(c) RWE said that firms may be (efficiently) absorbing short-run cost movements that risk-averse customers do not like. RWE also noted that there may be significant menu costs (costs of changing prices, such as the costs of updating the billing systems, informing customers, or reputational costs) or regulatory changes that may influence the degree of cost pass-through.[25]

(d) Centrica said that the analysis of "asymmetric" cost pass-through in SVT prices relies on the calculation of a "ratio" that is not a measure of

[24] Centrica (CRA), Provisional Findings data room report
[25] RWE, response to Provisional Findings

asymmetry, but rather is highly sensitive to the volatility of prices versus cost movements.[26]

38. With respect to point 37(a), we consider that forward-looking measures of cost are appropriate benchmarks for the purposes of this work as set out a paragraphs 5 and 9. We have focussed on the one-year ahead benchmark for the reasons given in paragraph 16, but we note that this has co-moved with other benchmarks (see paragraph 15)

39. With response to point 37(b), we acknowledge that a number of NSTs were launched at a premium to SVT. This does not, however, have any implications for the observations made in this analysis as set out at paragraphs 33(a) to 33(c).

40. With respect to point 37(c), see paragraph 4 above.

41. With respect to point 37(d), the analysis to which Centrica referred is in set out Section 8. We respond to Centrica's point in Section 8. Methodology.

42. The parties commented on the methodology for constructing the forward-looking cost benchmarks and price measures and, in particular, what cost items should be included in the analysis and how they should be measured:

(a) Centrica RWE and SSE said that variable indirect costs should form part of the cost pass-through analysis as these costs (eg metering costs, bad debts) are relevant to tariff setting. Parties also noted that these variable indirect costs have increased in the recent years.[27]

(b) Centrica and SSE said that suppliers' actual forecast costs (wholesale costs, policy costs and direct costs) are a better measure of the costs that inform suppliers' pricing decisions in the market than a hypothetical 1 year forward cost benchmark.[28,29]

(c) SSE said that our analysis did not sufficiently account for costs of shaping as these costs vary over time. Moreover, the cost estimates only partially captures the costs of purchasing energy (for example, they do not account for costs associated with variations in demand over days, weeks and longer periods).[30]

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[26] Centrica (CRA), Provisional Findings data room report
[27] Centrica, RWE and SSE, response to Provisional Findings.
[28] Centrica (CRA), Provisional Findings data room report.
[29] SSE (Frontier economics), Provisional Findings data room report.
[30] SSE (Frontier economics), Provisional Findings data room report.

(d) Centrica commented that our analysis, by using an assumption of constant typical consumption values, did not account for the impact of changing consumption levels over time.[31]

(e) Centrica said that the Ofgem SMI cost benchmark is not representative of the costs incurred by energy suppliers.[32]

(f) RWE argued that it would be appropriate to use average price weighted by market share rather than a simple average of SVT bills.[33]

43. With regards to point 42(a), see Section 8.

44. With regards to point 42(b), for each of the Six Large Energy Firms, we looked at how their forecasts of energy and other costs compared with the Ofgem SMI cost benchmark. The results are set out in Annex B. Whilst there are differences, these would not have any material implications for the observations we have made on the relationship between SVT and NST prices and movements in the costs. We also noted that the firm-level forecasts of costs will be sensitive to strategies each has adopted in the purchasing energy. We were also told that there are differences between suppliers in how certain costs are accounted for (see paragraph 19 above).We consider that approach we have taken provides a consistent basis for measuring industry-level movements in forward-looking direct costs.

45. With regards to point 42(c), we reviewed the evolution of shaping costs and did not find them to vary materially over time.

46. With regards to point 42(d), we conducted the analysis applying different assumptions on typical domestic consumption values (see Annex B, Figures 3 and 4). These show that the observations we have made on the relationship between movements in prices and forward-looking costs would not be sensitive to the assumptions made on typical consumption. We consider that approach we adopted provides a consistent basis over time for comparing movements in prices and forward-looking direct costs.

47. With regards to point 42(e), our analysis in paragraph 23 to 25 addresses this point.

48. With regards to point 42(f), this point is addressed at paragraph 28.

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[31] Centrica, response to Provisional Findings.
[32] Centrica, response to Provisional Findings.
[33] RWE, response to Provisional Findings.

Annex A: Cost benchmark methodology

1. Table 1 below summarises the assumptions used in constructing the forward-looking cost benchmarks, and compares these assumptions to Ofgem's assumptions in the construction of the SMI.

Table 1: Wholesale cost assumptions

Assumption	*Forward-looking cost benchmarks (one-year and two-year)*	*SMI (adjusted by the CMA and presented in our analysis)*	*SMI (as published by Ofgem)*
Wholesale cost	70% baseload, 30% peak (current forward prices of future products)	70% baseload and 30% peak load (historical forward prices of future products)	70% baseload and 30% peak load, hedging
Carbon cost	Embedded in wholesale energy prices	Embedded in wholesale energy prices	Embedded in wholesale energy prices
Transmission/distribution losses (electricity only)	Yes, 8% loss assumed	Yes, 8% loss assumed	Yes, 8% loss assumed
Imbalance (cash-out) costs (electricity)	Yes, 0.15 £/MWh	Yes, 0.15 £/MWh	Yes, see SMI methodology
Shaping costs	Implemented as the weighted average of baseload and peak product prices (see above) A further 3% cost added for electricity and 1% cost for gas respectively.[34]	Implemented as the weighted average of baseload and peak product prices (see above)	Implemented as the weighted average of baseload and peak product prices (see above)
Gas reconciliation by difference cost	No	No	Yes, see SMI methodology
Demand forecast error (gas)	No	No	Yes, see SMI methodology
Unbilled volumes (such as theft, unmetered consumption)	No	No	Yes, see SMI methodology
VAT	Yes	Yes	Yes

Source: CMA and Ofgem analysis.

2. Table 2 below summarises the other cost items included in the indices. The assumptions used to construct these cost items are set out in the *Methodology for the Supply Market Indicator* (Ofgem).[35]

[34] Based on analysis done by NERA.
[35] See Ofgem's SMI methodology.

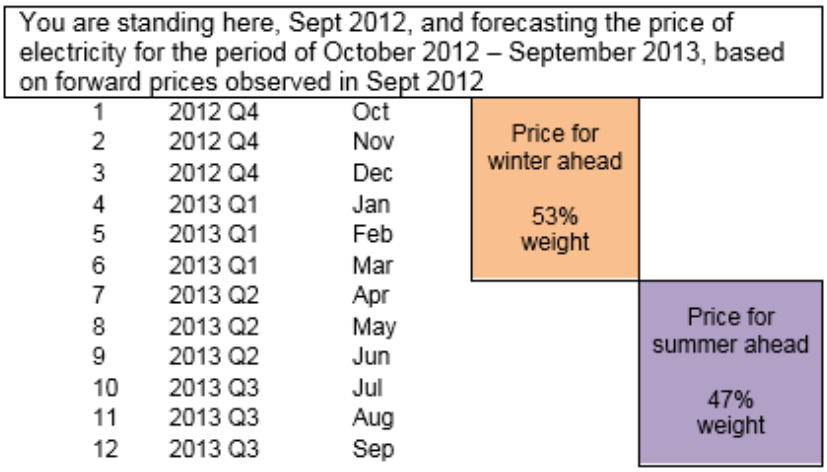
Table 2: Other cost assumptions

Cost category	*Forward-looking cost benchmarks (one-year and two-year)*	*SMI (adjusted by the CMA and presented in our analysis)*	*SMI (as published by Ofgem)*
Gas distribution charges	Yes	Yes	Yes
Gas transmission charges	Yes	Yes	Yes
Electricity distribution charges	Yes	Yes	Yes
Electricity transmission charges	Yes	Yes	Yes
BSUoS	Yes	Yes	Yes
Supplier operating costs	No	No	Yes
Smart metering costs	No	No	Yes
Depreciation and amortisation	No	No	Yes
ROCs	Yes	Yes	Yes
FITs	Yes	Yes	Yes
ECO	Yes	Yes	Yes
Warm Home Discount Scheme	Yes	Yes	Yes
CfDs	No	No	Yes
Government funded rebate	No	No	Yes

Source: CMA and Ofgem analysis.

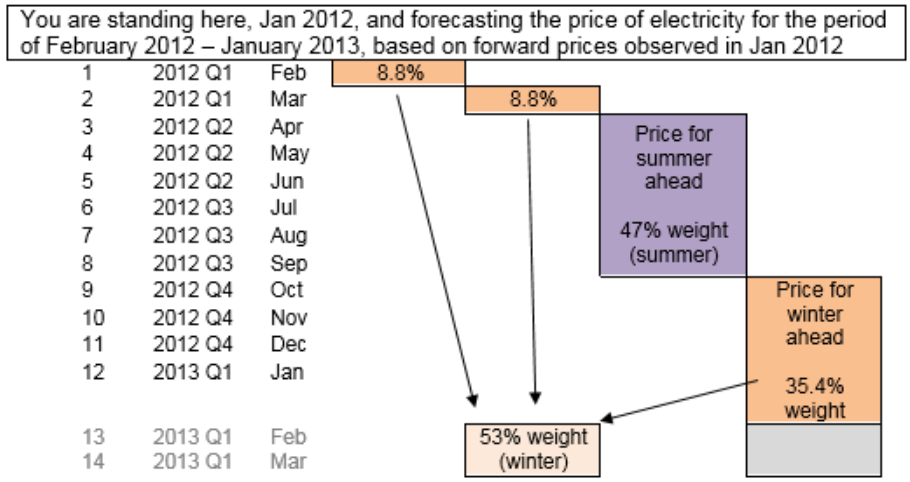
3. Figures 1 and 2 below illustrate how the one-year benchmark was calculated for baseload electricity at two different points in time. The gas index was calculated similarly; however, we have used quarterly gas products rather than seasonal. We note that our electricity benchmark is constructed using the same method for baseload and peak product prices.

Figure 1: Illustration of the method for calculating the one-year forward-looking cost benchmark for September



Source: CMA analysis.

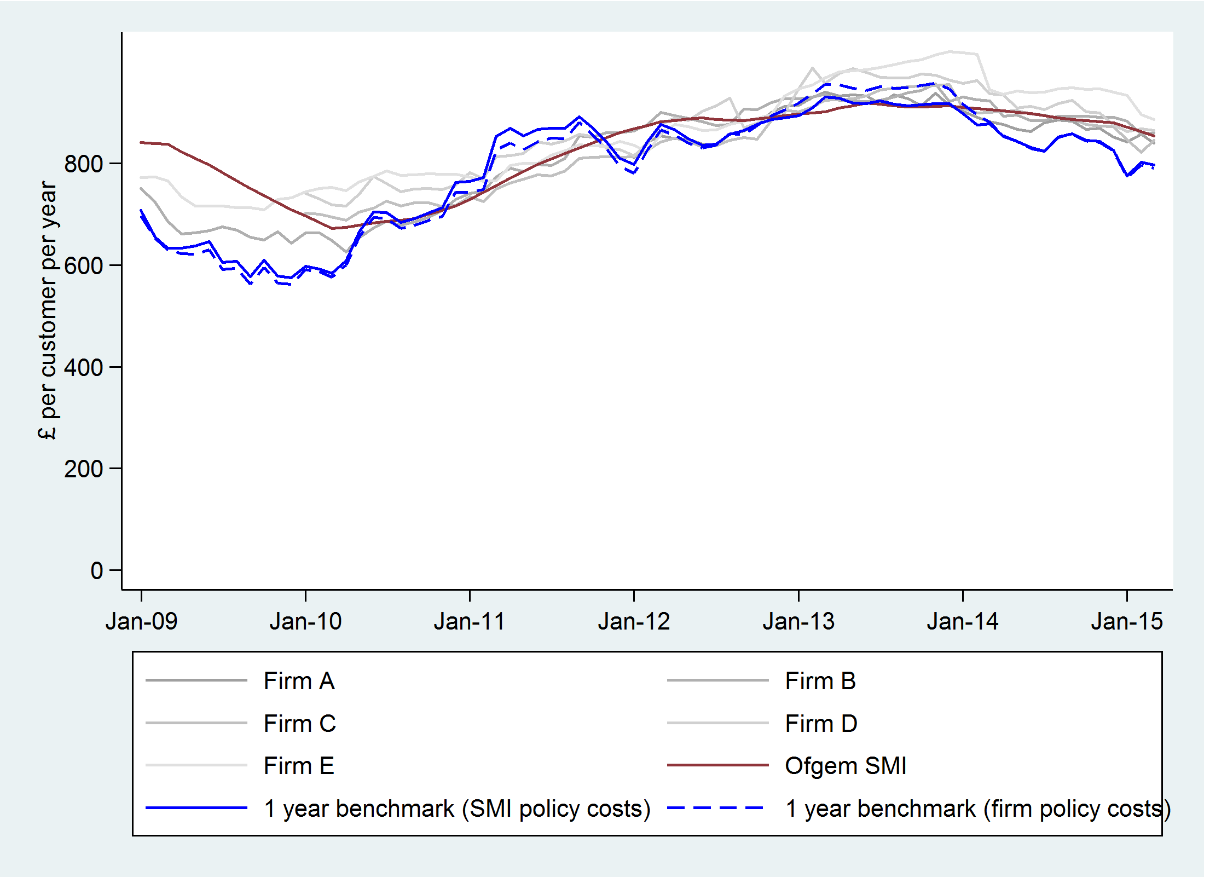
Figure 2: Illustration of the method for calculating the one-year forward-looking cost benchmark for January



Source: CMA analysis.

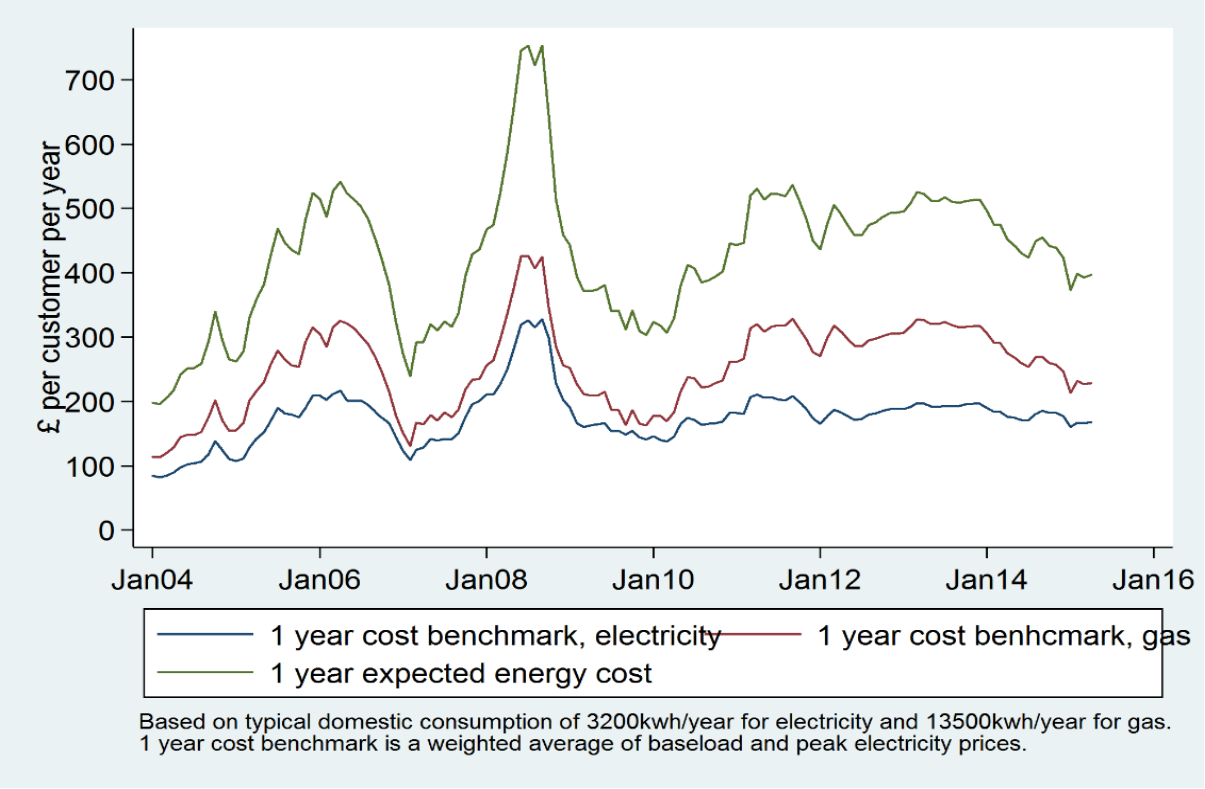
Annex B: Further results

Figure 1: Comparison of industry cost benchmarks and firm-level forecasts of energy and other costs



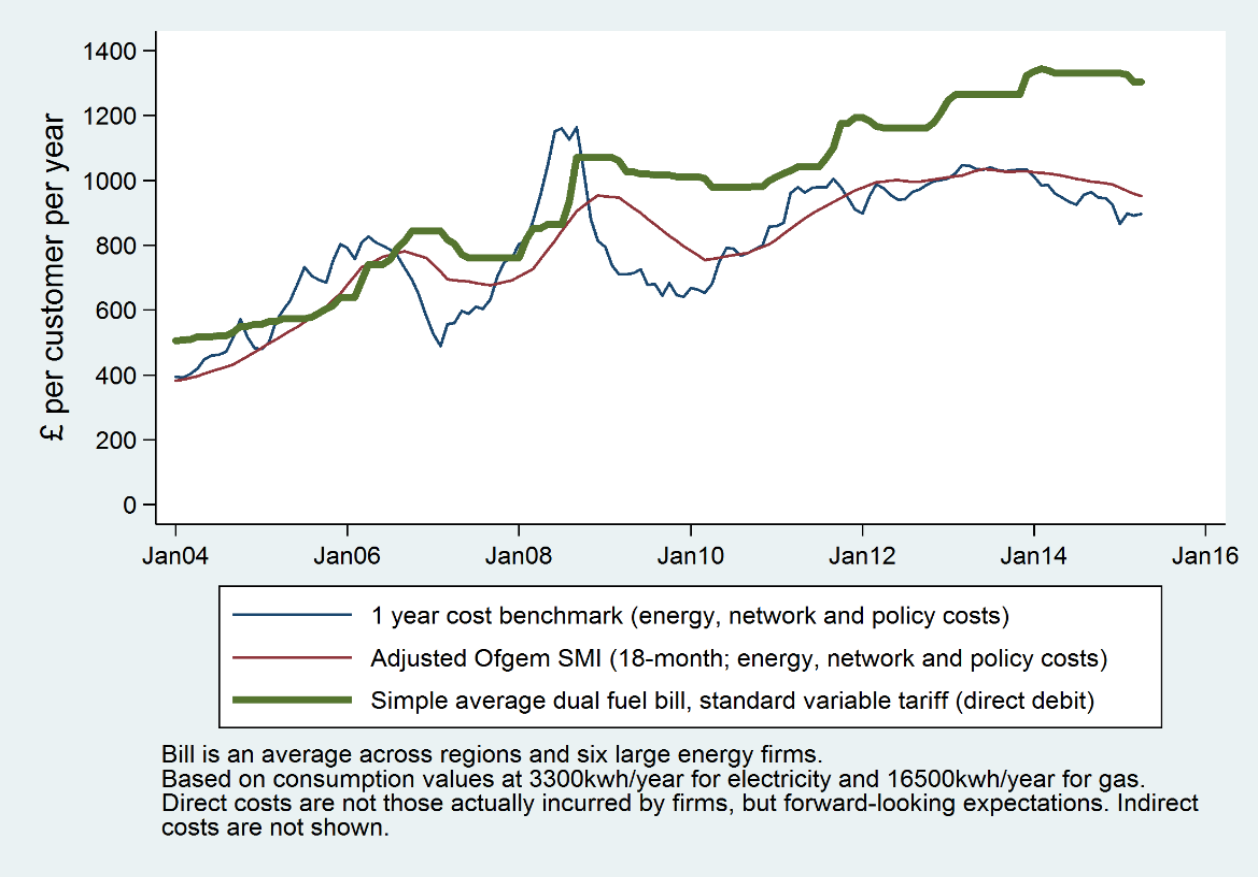
Source: CMA analysis of data collected from ICIS, Ofgem and five of the Six Large Energy Firms.
Note: [✂]

Figure 2: Evolution of the one-year forward-looking energy cost benchmark: comparison of gas and electricity



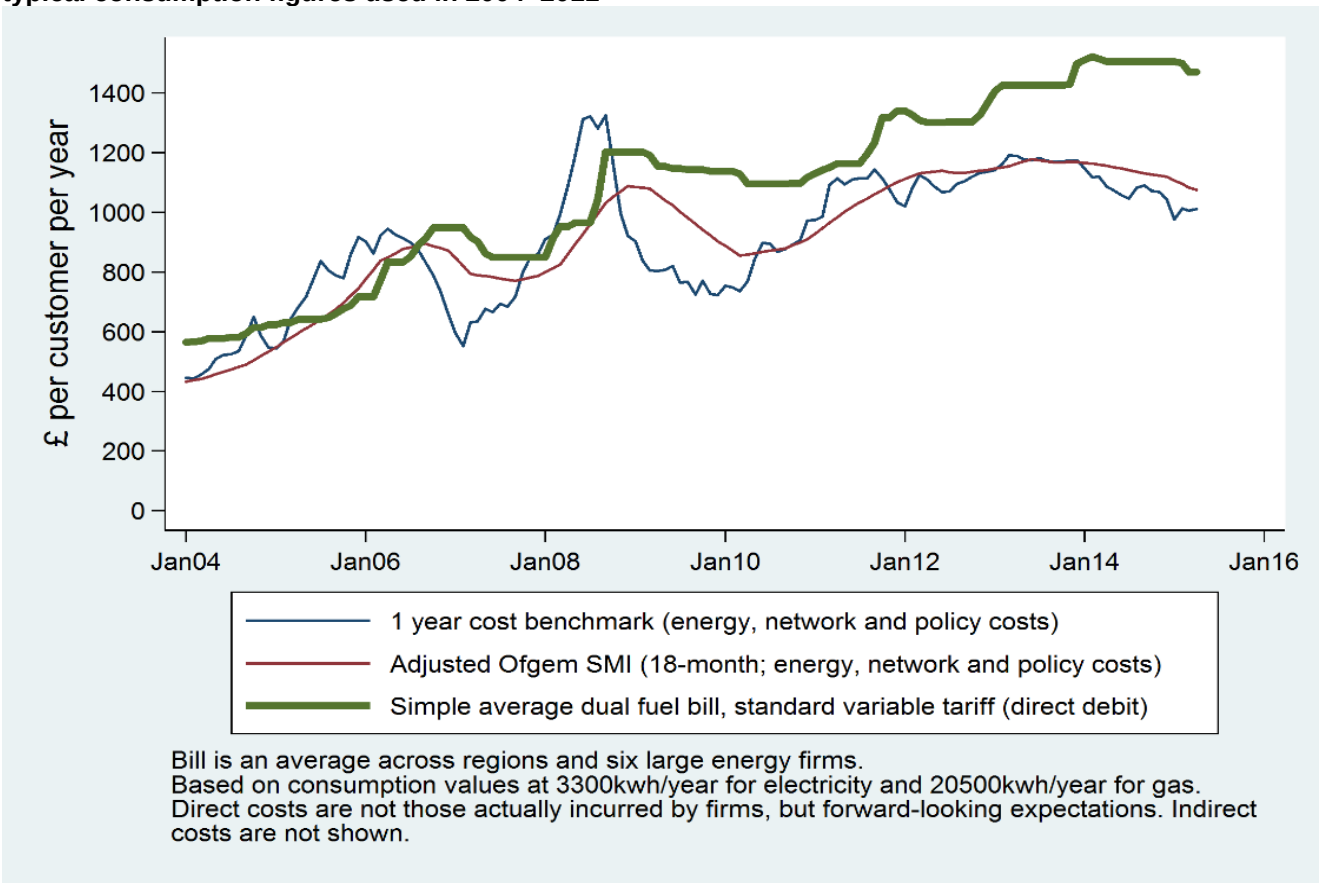
Source: CMA analysis of data collected from ICIS.

Figure 3: Average SVT price and a forward-looking industry-level benchmark of direct costs: typical consumption figures used in 2011–2013



Source: CMA analysis of data collected from ICIS.

Figure 4: Average SVT price and a forward-looking industry-level benchmark of direct costs: typical consumption figures used in 2004–2011



Source: CMA analysis of data collected from ICIS.

Figure 5: Evolution of metering costs per domestic customer account by supplier

[✂]

Source: CMA analysis of P&L information of Six Large Energy Firms