

## Pricing

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### Summary

1. The prices paid by domestic customers for bulk LPG vary widely depending on the supplier, on whether the customer is new or established, and on whether the customer has negotiated a discount. Variations in the cost of supplying different customers (depending on factors such as the tank size and volume of LPG purchased) explain only a small part of price differences between customers. Substantial differences exist between the average prices charged by the four major suppliers (Calor, Flogas, Shell and BP)—nearly 10 per cent between the highest and lowest priced supplier.

2. [X] The prices of smaller suppliers vary around a wide range: [X]. With the exception of [X], the major suppliers told us that they do not, on the whole, charge systematically different prices between regions, and this is supported by our analysis.
3. [X] and [X] all offer introductory discounts to new customers.<sup>1</sup> [X] introductory price is fixed for only six months. Those of [X] are fixed for the first [X] and those of [X] are fixed for up to three years; the size of the discount falling each year.
4. Calor and [X] offer standard prices to domestic bulk LPG customers, [X], and a proportion of customers are charged at a discount on the standard price. In contrast, [X] and Shell told us that they calculate prices individually depending on expected customer usage and other features of the account. Our analysis of prices in Annex 1 indicates that, for each major supplier, factors such as the volume of LPG consumed, the length of time the account had been in place, and whether the customer had negotiated a discount explain only a proportion of the variation in prices between customers.
5. Price changes by the four major suppliers appear, in recent years, to have been caused more by changes in the wholesale price of propane (which has fluctuated considerably over the period), than competitive responses to changes in each others' prices. Of the major suppliers, [X] systematically collects information on competitor prices.
6. We considered whether conditions existed for coordination between suppliers. There is some evidence to suggest that the conditions for coordination may be met in this market, but we have not seen any clear evidence that such coordination occurs at present.

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<sup>1</sup>[X] commented that because it had no standard charges 'initial price' was a more appropriate term than than 'discount'.

## Note

7. The focus in this appendix is on prices, and pricing policies, in 2003 and 2004. One reason for this is that data for these years were available at the start of the investigation, and to request an update of all relevant information (including customer databases) would have placed a considerable burden on suppliers. We consulted with the major suppliers who broadly agreed that the market had not changed in any significant respect since this time period. Another reason was our concern that firm behaviour during the period of the investigation could be influenced by the investigation itself. We did, however, receive updates of monthly average prices, which we have used.

## Headline prices

8. We begin with an overview of prices charged by the major suppliers. Further details are provided in later sections. Average prices for the four major suppliers are shown in Table 1. The suppliers provided us both with average monthly prices and with prices charged to each customer. We noted inconsistencies within the customer database information, and have therefore relied, where possible, on aggregated pricing data. Over the period shown, [redacted]. The average price of the highest-priced major supplier over this period was typically between [redacted] per cent higher than that of the lowest-priced major supplier. Revenue per litre from standing charges, based on customer database information, is also shown in the table.<sup>2</sup> [redacted]

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<sup>2</sup>[redacted] noted that the additional revenues were fixed and not volume-related. It argued that for this reason they should not be expressed in pence-per-litre terms. However, our intention is simply to compare revenues from LPG relative to the volume of LPG supplied.

TABLE 1 Price comparison: major suppliers

	<i>pence per litre</i>			
	2003	2004	2005 (to October)	Revenue per litre for standing charges 2003*
Calor	(		<	)
Flogas				
Shell				
BP				

Source: LPG suppliers.

\*Standing charges calculated from suppliers' customer databases, excluding metered estate customers, customers with zero or negative recorded consumption and customers in the highest and lowest percentiles of consumption.

9. Average monthly prices to domestic customers, from mid-1999 to mid-2004, are shown in Chart 1.<sup>3</sup> Prices increased substantially in 2000: [<] and [<]. The major suppliers told us that price fluctuations were principally due to changes in the cost of propane, (see Annex 2). The major suppliers have sustained substantially different average prices over the period: [<]. Flogas told us that [<]<sup>45</sup> A number of customers complained that suppliers were quicker to pass on increases in the cost of propane than decreases. Our analysis of wholesale and retail prices over time (see Annex 2) did not support this complaint.

### CHART 1

#### Average monthly prices to domestic customers (1)

[<]

## Pricing policies

### Calor

10. [<]

11. [<]

<sup>3</sup>Month-to-month fluctuations may be due in part to variations in the customer mix—eg more (or fewer) deliveries to customers who are on lower prices in one month than another.

<sup>4</sup>[<]

<sup>5</sup>[<] commented that the price fluctuation in Chart 1 did not show different prices each month but was due to the mix of customers and therefore distorted the price smoothing effect. [<] standard prices are shown in Chart 3.

12. As of 1 January 2004, [X] per cent of Calor's domestic bulk customers were charged a price equivalent [X]; a further [X] per cent paid the [X] price of [X] pence per litre (ppl). Around [X] per cent of Calor customers did not pay one of these standard prices.

13. [X]

### CHART 2<sup>6</sup>

#### Calor customer prices as at 1 January 2004

[X]

14. [X]

15. [X]<sup>7</sup>

16. [X]<sup>8</sup>

17. [X]

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<sup>6</sup>[X]  
<sup>7</sup>[X]  
<sup>8</sup>[X]

### CHART 3

#### Calor prices, weekly trend, 1999-2004

[REDACTED]

##### ***Flogas and Flogas NI***

18. [REDACTED]

19. At the start of 2004, Flogas charged [REDACTED] of its customers a price of [REDACTED], while the remaining [REDACTED], with no other single price being charged to more than [REDACTED] per cent of its customers.

20. Flogas [REDACTED]. If the shift in propane prices is expected to be temporary, Flogas will [REDACTED]. Flogas told us that, in general, all domestic customers would receive a standard letter announcing a price change. [REDACTED]

21. Flogas told us that the factors it considered in determining a price reduction to prevent customer switching were [REDACTED].

22. [REDACTED]

23. [REDACTED]

##### ***Shell***

24. In 2003, Shell charged an average introductory price of [REDACTED] ppl (compared to an average price overall of [REDACTED] ppl). Shell provided us with an analysis of prices which concluded that new customers had not been paying consistently lower prices than existing customers. However, this analysis defined new customers to include customers who had moved into a house that was already supplied by Shell, as well as customers who were 'truly' new to Shell.

25. [redacted]

26. Shell told us that it did not differentiate between regions other than for depots in the [redacted] which faced higher transport costs.

### **BP**

27. [redacted]

28. [redacted]

29. [redacted]

30. [redacted]

31. [redacted]

### **Standing charges**

32. The average standing charge per annum is around £[redacted] for [redacted] customers and £[redacted] for the customers [redacted]. Revenue from standing charges is around one fifteenth (for [redacted]) and [redacted] (for the [redacted]) the size of revenue from LPG sales. (See also Table 1 above.)

### **Comparative price levels**

33. The distribution of prices (excluding standing charges) to domestic bulk LPG customers at the end of 2003 are shown in Chart 4.<sup>9,10</sup> [redacted]

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<sup>9</sup>[redacted]  
<sup>10</sup>[redacted]

**Pricing by smaller suppliers**

34. The prices, and pricing policies, of smaller suppliers vary widely (see Table 2). [X] out of [X] suppliers who provided information did not offer lower prices to new customers than to established customers; of the remaining [X] offered a substantial discount, [X] a small discount, and [X] did not state the discount offered. [X] of the [X] charged a standard price, but [X] of these offered discounts to a majority of their customers. Prices charged by different suppliers varied widely—for example, average prices charged in 2003 ranged from under [X] (about [X] below that of the cheapest of the major suppliers) to above [X] ([X] above that of the most costly of the major suppliers). [X] appear to have increased their prices since 2003, but others have not.

TABLE 2 **Prices and pricing policy**

<i>Smaller suppliers</i>	<i>Number of domestic customers (2003)</i>	<i>Introductory price (Oct 04)</i>	<i>Average or standard price (Oct 04)</i>	<i>Average price 2003</i>	<i>Standard price</i>	<i>Proportion of customers negotiating discount from standard price</i>
[ ]			[X]			[ ]
<i>Larger suppliers</i>			[X]			[ ]

Source: LPG suppliers.

[X]

## Comparison by sector

35. Average prices to domestic customers are compared to those charged to other customers in Chart 5. [X] told us that domestic customers generally did not have access to deals aimed at non-domestic customers. One reason for this was that business customers had higher demand, generating a higher ROCE. Another was that non-domestic customers were more likely to use LPG throughout the year, improving tanker fleet utilisation. In addition, the average price may be influenced by a few high-volume customers paying lower prices. Other suppliers made similar points.
36. Trend data indicate a substantial price increase in 2000/2001 across companies and customer groups, a dip in 2001/2002 (for [X] and [X]) and relatively stable prices thereafter (see also Chart 1). The relationship between prices and the principal input cost—propane—are analysed in Annexes 2 and 3.

[X]

## Metered estates

37. Metered estate customers generally pay lower prices than other domestic customers, particularly those of [X] and [X] ([X]). The major suppliers told us that tank utilisation is generally higher for metered estate installations than tanks supplying individual premises thereby giving logistical efficiency advantages. Table 3 presents data on prices paid to the suppliers by metered estate customers.

TABLE 3 Prices to metered estate customers and other domestic customers

Pence per litre	Calor		Flogas		Shell	
	Non-metered estate	Metered estate	Non-metered estate	Metered estate	Non-metered estate	Metered estate
<div style="display: flex; justify-content: space-around; align-items: center;"> <span style="font-size: 2em;">{</span> <div style="text-align: center;"> <p>×</p> <p>×</p> </div> <span style="font-size: 2em;">}</span> </div>						
Average ppl:	(			×		)

Source: LPG suppliers.

**Notes:**

- 1. BP did not provide pricing data for metered estate customers.
- 2 Some estate-management firms purchase bulk LPG for domestic use on their estates; they are classified by suppliers as commercial customers.

**Determinants of price**

38. The major suppliers also told us that prices charged to individual domestic customers were influenced by, among other things, cost factors including volume purchased, distance from depot, and the length of time that customers had been with the supplier. Annex 1 consists of a regression analysis relating cost factors such as volume of LPG, tank size, and distance from depot to the price of LPG. It finds that, while some cost variables have a statistically significant effect on price, the effects tend to be relatively small, and, even when they are combined with other factors such as whether the customer is new, or has negotiated prices, much of the variation in prices between customers is unexplained.

**Monitoring of competitor pricing**

39. [X] surveys a panel of its competitors' customers each month in order to monitor prices. [X] competitor prices by [X] are shown in Chart 6, along with the actual

maximum and minimum average prices of [X]. [X] estimate is between the actual maximum and minimum average price [X]. The results of [X] panel for September 2004 appear as Table 7. [X] did not have a monitoring program in place, but received indicative prices of other suppliers from its account managers. [X]

### CHART 6

#### [X] price monitor estimates v actual competitor prices

[X]

TABLE 7 [X] price panel results, September 2004

	Average	Max	Min	Observations
		X		

Source: [X]

40. [X]

41. [X] provided us with reasons for its price increases and decreases over the period. In all cases the reasons related to current and forward prices of oil and LPG: competitor pricing was not mentioned as a reason. [X] told us that none of the price changes were in response to the retail price of another supplier. It said that the period was one of unprecedented volatility and increases in raw material prices, which inevitably had a major short term effect on pricing decisions by [X], and that no general conclusions about long term pricing strategy should be drawn from the behaviour of market players during such a period.

## Coordination

42. We now consider the scope for coordinated behaviour between LPG suppliers. Our guidelines<sup>11</sup> set out three conditions as necessary for coordinated effects to occur and be sustainable through time. These conditions can be summarised as:

- (a) The market must be sufficiently concentrated for any significant deviation from the prevailing behaviour to be observed by other firms.
- (b) Deviation from the behaviour must be costly to the firm doing so—for example, if it cuts prices, other firms respond with a matching price cut such that the price cut of the original firm is not profitable.
- (c) Competitive constraints must be relatively weak. If barriers to entry are low then the threat of entry will tend to undermine such conduct.

### ***Transparency of coordinated behaviour***

43. The market is highly concentrated (with a HHI above 3,000<sup>12</sup>). Suppliers monitor one another's prices to a limited extent (see paragraphs 39 to 41), but prices are not generally transparent, particularly in view of the wide range of prices offered to each supplier's customer base. However, when a customer switches supplier the outgoing supplier will invariably know the identity of the new supplier, as arrangements relating to the change in supply are made between the two suppliers. If a customer obtains a lower quote from a competitor and uses this to negotiate a discount from the incumbent supplier, the incumbent may in many cases be able to identify the competitor concerned. In summary, the nature of firms' information about each others' behaviour suggests that there may be some scope to coordinate on the extent to which they approach each other's customers or how they respond to approaches to each other's customers—ie whether they try to win these customers,

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<sup>11</sup>CC3—Market Investigation References: Competition Commission Guidelines, paragraphs 3.62 to 3.67.

<sup>12</sup>The HHI or Herfindahl-Hirschman Index is defined as the sum of the squares of all the market shares in the market. As set out in paragraph 3.11 of CC3, the OFT guidelines state that the OFT is likely to regard any market with a HHI in excess of 1800 as highly concentrated, and that where it uses the HHI, the CC will have regard to that threshold level, but only as one factor in its wider assessment of competition.

and particularly the prices they quote to them—rather than to coordinate on their average or standard prices.<sup>13</sup>

### ***Cost of deviation***

44. In markets where switching costs are high, attempts by competitors to win a customer from an incumbent supplier may result in the customer using the competitor's quote to obtain a discount from his incumbent supplier. In such a case, there is a cost to the incumbent (which has to offer a lower price to retain those customers) but no benefit to the competitor (which does not win the new customer) and the incentive to deviate from any coordination (by offering aggressively low prices to the other supplier's customers) would consequently be limited. In addition, if one of the suppliers did cheat, the other could potentially respond to this deviation by offering lower prices to customers of the first supplier. The first supplier would then have to lower its prices to those of its own customers who had been approached by, or had approached, the other supplier, in order to retain them. Such an analysis suggests that the second condition could, in principle, be satisfied in the market for domestic bulk LPG.

### ***Competitive constraints***

45. Coordination is less likely if barriers to entry are low, or a fringe of firms outside the core oligopolists have the incentive and scope to attract significant volume away from the core group. In the present case, market entry has occurred, and a fringe of smaller competitors exists in Great Britain, though not in Northern Ireland. However, several smaller suppliers told us that winning a new customer entailed a substantial investment due in part to the need to install a new tank. In addition, we note that if a customer threatens to switch and the current supplier responds by offering a lower price, the customer can avoid switching costs by staying with the current supplier,

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<sup>13</sup>See also the discussion of parallel pricing in paragraphs 46 and 47.

and this will tend to reduce the incentive to attempt to win customer from existing suppliers (see Appendix G, paragraphs 109 to 113). Hence, the scope for expansion by these fringe players, and consequently the degree of competitive constraint they impose, may be limited.

### ***Other indicators of coordination***

46. We considered whether suppliers were co-ordinating their prices by analysing prices charged by three of the major suppliers, and propane costs, in recent years. The model estimated the relationship between current-period price changes for each supplier and price changes by all suppliers, and wholesale prices, in previous periods. Initial results indicated a possible relationship between current-period price changes by some suppliers and previous-period price changes by others. However, data was not available from one of the major suppliers ([X]), with the result that competitive interaction between the four could not be modelled in full. Furthermore, structural shifts, particularly Flogas' acquisition of British Gas, suggested that the period should not be studied as a single time series, but analysis of shorter periods would have been based on an unsatisfactorily small number of observations. In view of these concerns, we considered that the model we developed was not sufficiently robust to constitute evidence of coordination in prices.
  
47. Furthermore, limited customer awareness of the prices available from alternative suppliers (see Appendix G, paragraph 76), and the evidence that customers seldom switch directly in response to disparities, or changes, in the relative prices offered by different suppliers (Appendix G, paragraphs 54 to 63), indicate that there is little, if any, incentive for suppliers to attempt to harmonise their prices.

***Scope for coordination***

48. In the light of the above discussion, we consider that there is some evidence to suggest that the conditions for coordination may be met in this market. However, we have not seen any clear evidence that such coordination occurs at present.

## **Regression analysis of inter-firm price differences**

- 1.1. The four major suppliers provided us with details from their customer databases about the price charged to each domestic customer (as of 1 January 2004), and characteristics of the customer account which could potentially affect the price charged—such as the volume of LPG consumed, the length of time the account had been in place, and whether the customer had negotiated a discount.
- 1.2. We analysed this data to assess how much, if at all, variation in prices to different customers by the same supplier reflected cost differences in supplying those customers.
- 1.3. We found that while some characteristics (not necessarily cost-related) of the customer account had a statistically significant effect on the price, those characteristics on which the parties provided us with data, taken together, explained only a small part of the observed price variations between customers.

## **Background**

- 1.4. Variables considered for inclusion in the equations were based on the following:
  - volume of LPG consumed;
  - the year when the contract was signed;
  - distance from the supplier's depot to the customer's premises;
  - whether or not the customer had negotiated a discount;
  - payment by direct debit;
  - automated top-up arrangement;
  - whether property was on a metered estate.

- 1.5. The regression equations are estimated by Ordinary Least Squares (OLS). The validity of the method assumes implicitly that price and volume are not simultaneously determined, ie that LPG consumed does not depend on the price charged.<sup>14</sup> It is possible that some consumers use more LPG because they pay a lower price, but we have assumed that such an effect is limited. To the extent that this does occur, the effect will be to overstate the effect of volume consumed on price in the equations discussed below.
- 1.6. The data we received from the four major suppliers included records with no, zero or negative distance, volume or price information. We excluded these observations from the following regression analysis. In addition, variables are based on supplier reports and some—such as whether the customer negotiated or was free to switch supplier—may have been open to interpretation. Variables included in the equations (depending on availability of data) are shown below. The purpose of the variables neg04\_Lvol and nego04\_dist is to assess whether distance from the depot and the volume of LPG consumed have a greater impact on prices among customers who negotiate their prices.

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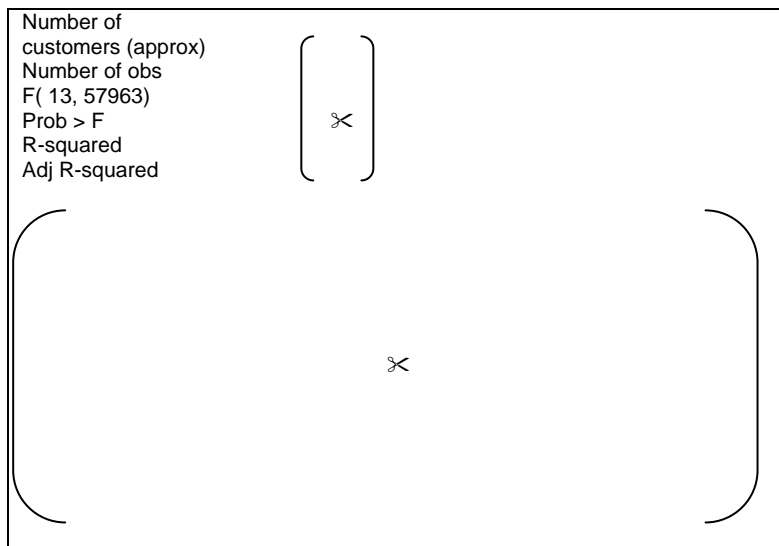
<sup>14</sup>Annual volume consumption for 2003 was used, and price as of 1 January 2004; however, prices on 1 January 2004 can be expected to be closely correlated to prices over 2003 and before.

Variable name	Description
In_p04	Log of price as at 1/1/2004
Lvol	Log of volume consumed in 2003
neg04	Whether negotiated price in 2004 (Yes = 1, No = 2)
neg04_Lvol	"neg04" multiplied by "Lvol"
Dist	Distance from depot
neg04_dist	"neg04" multiplied by "dist"
top_up	Whether received automatic top-up
d_d	Whether paid by direct debit
Metered	Whether property was on a metered estate
y_1999 (etc)	Supply agreement commenced in 1999
Free	Customer is free to change suppliers (as reported by suppliers)
In_tank_size	Log of tank size
Cons	Constant term

## Calor

Regression (1)

Dependent variable: in prices 04



1.7. The R-squared indicates that [ $\times$ ] per cent of the variation in logarithmic prices can be explained by variations in the characteristics of customers and their contracts with Calor.

1.8. [ $\times$ ]

1.9. [X]

1.10. [X]

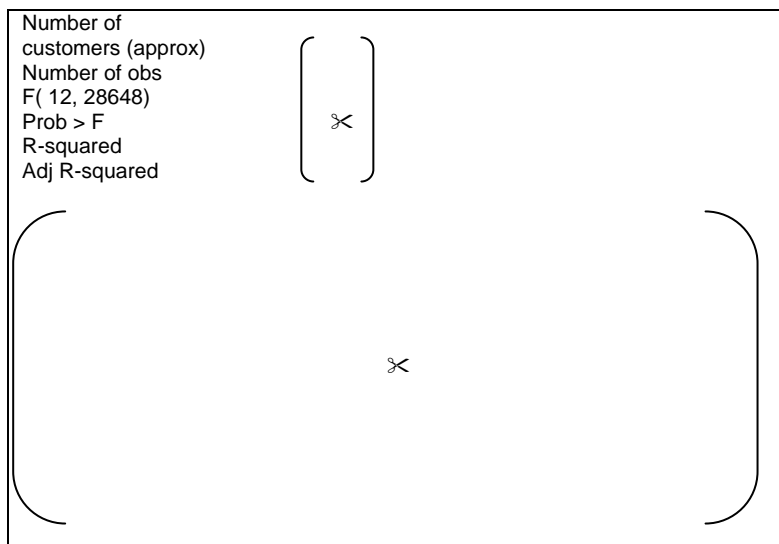
1.11. [X]

1.12. [X]

### Flogas

Regression (2)

Dependent variable: in prices 04



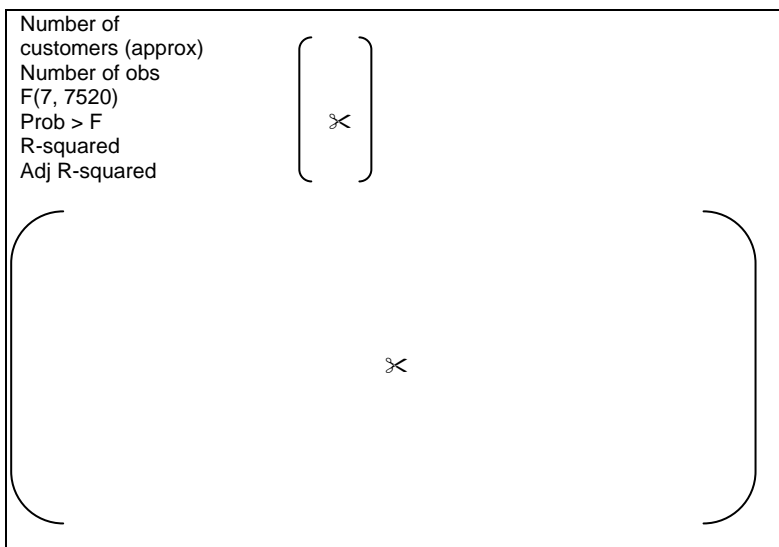
1.13. [X] of the variation in logarithmic prices between Flogas customers is explained by the available explanatory variables. [X]

1.14. [X]

1.15. [X]

1.16. [X]

Dependent variable: in prices 04



1.17. The above results confirm that [⌘] explain around [⌘] per cent of variation in logarithmic prices among BP customers, [⌘].

1.18. [⌘]

**Shell**

1.19. [⌘]



## Regression 5—Pooled data

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>	<i>Model 5</i>
			✂		

### Summary of findings

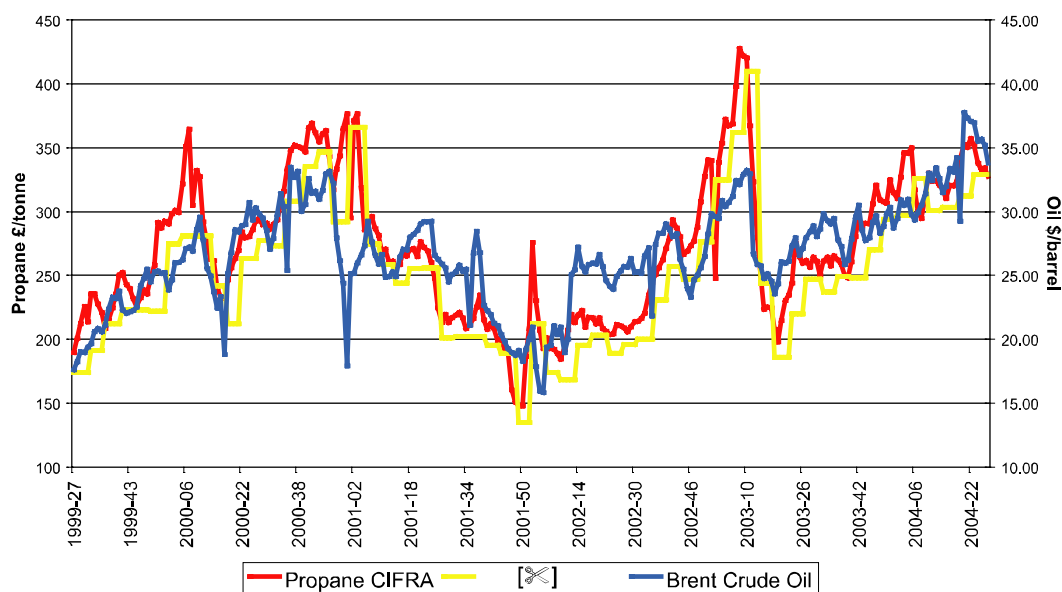
- 1.22. The estimated logarithmic relationships between prices and volume suggests a non-linear price schedule, subject to bargaining, although substantial variation in unit prices remains unaccounted for on the basis of the available covariates. Prices are not, however, very responsive to the volume consumed: substantial differences in consumption between customers are associated with only small differences in price.
- 1.23. LPG prices are on average lowest in the year during which a contract has been signed. This finding is indicative of companies offering lower introductory prices to new customers, although some suppliers appear to offer below-average prices to customers who have started using them in the past five years.
- 1.24. Other characteristics of customers' contracts (eg tank size, distance from depot, whether the customer pays by direct debit or has an automated top-up agreement) which could potentially affect the cost of supply do not in general have a meaningful and statistically significant impact on per unit prices. On the whole, very little variation between customer prices is explained by such factors, and even start dates and volume consumed have limited explanatory power.

**Price and input cost trends**

2.1. Two measures of propane price ([X]) are illustrated in Chart B1, ([X]) along with the price of Brent Crude Oil. Shell told us that the price of crude oil does not affect the retail price of LPG other than to the extent it moves with/affects the price of internationally traded propane. The chart has been arranged to show Brent Crude on a similar level to the propane prices, although the unit of measurement is different. Crude oil and propane prices are evidently highly correlated although they do not move in unison. [X] told us that Chart B1 demonstrated that the price of propane was far more volatile than that of crude oil in the long term. [X] told us that the cost of propane was only materially affected by the cost of crude when the latter increased significantly in a short period of time.

**CHART B1**

**Commodity prices 1999 to 2004**



2.2. [X]

## CHART B2

### Calor prices, weekly trend, 1999-2004

[X]

## CHART B3

### Calor average price minus propane (CIFRA) price, 1999-2004

[X]

- 2.3. Some customers expressed concern that suppliers passed on increases in input costs more quickly than decreases. Analysis of [X] and [X] retail pricing from 1999 to 2004 does not support this view. [X] and [X] provided monthly data which contained too little variation for robust analysis.
- 2.4. [X] told us that for customers buying relatively small volumes of LPG such pricing structures would be inappropriate, as such customers typically wanted to know the price expressed in pence per litre. We do not find these arguments compelling, since domestic customers will ultimately face higher prices if propane costs go up, even if they are temporarily smoothed, and linking prices to propane cost does not necessarily preclude them from being quoted in pence per litre.

**Indicators of the extent of overpricing**

3.1. [X]

[X]

3.2. [X]

3.3. [X]

3.4. [X]

3.5. [X]

3.6. [X]

3.7. [X]

3.8. [X]

3.9. [X]

3.10. [X]

[X]

3.11. [X]

3.12. [X]

[~~ⓧ~~]

3.13. [~~ⓧ~~]

3.14. [~~ⓧ~~]

[~~ⓧ~~]

3.15. [~~ⓧ~~]

[~~ⓧ~~]

3.16. [~~ⓧ~~]

[~~ⓧ~~]

3.17. [~~ⓧ~~]

**Summary**

3.18. [~~ⓧ~~]