

Sales, margins and pricing data

Introduction

1. In this appendix we:
 - (a) present sales data segmented by customer type (ie water and industrial customers) and geographic location; and
 - (b) present margin and price data.

2. All our analysis is undertaken on transaction-level data and is primary analysis undertaken by the CC, except for estimates of BOC gross margins, where due to data limitations we rely on BOC's estimates submitted to the OFT.

The data used for the analysis

3. BOC, Ineos Chlor and Albion provided customer-level sales data of packaged chlorine products. Ineos Chlor provided monthly data for the period January 2001 to May 2008 on the volume (tonnes) and selling price (per tonne) of each product sold to each customer. BOC provided annual data for the period 2000 to 2007 on the volume sold, and revenue received, from each customer, for each product. Albion provided monthly data for 2007 on the volume sold, and revenue received from each customer for each product and annual volume sales from 2001 to 2007. Air Products provided total sales of packaged chlorine products for the period 2004 to 2008 for each product type.

4. We undertook our analysis on sales to end-user customers and excluded sales of packaged chlorine to other distributors. For the purposes of our analysis we grouped packaged chlorine products according to size. Table 1 provides details on these product groupings.

TABLE 1 BOC and Ineos Chlor product groups

Product group	BOC product kg	Ineos Chlor product	Albion product kg	Air Products product kg
33kg cylinder	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
71kg cylinder	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
860–875kg drum	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
965–1,000kg drum	[REDACTED]	[REDACTED]	[REDACTED]	

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Sales data

5. Table 2 shows total sales of packaged chlorine products by BOC, Ineos Chlor and all distributors in 2007, by geographic area. In 2007, virtually all of BOC's sales (by value) were to customers located within Great Britain. [REDACTED]

TABLE 2 Sales by geographic area, 2007

	BOC		Ineos Chlor		All distributors	
	Total value £'000	Total volume tonnes	Total value £'000	Total volume tonnes	Total value £'000	Total volume tonnes
Great Britain	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Northern Ireland	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Ireland	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Isle of Man and Channel Islands	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Note: All distributors includes sales by BOC, Ineos Chlor, Albion and Air Products. We exclude sales by Gerling Holz.

6. Table 3 and 4 show BOC, Ineos Chlor and all distributors' packaged chlorine sales to different customer types in 2007. Ineos Chlor is significantly larger than BOC, with sales of more than [REDACTED] times (by value) and [REDACTED] times (by volume) those of BOC. In terms of customer types, of the [REDACTED] tonnes of packaged chlorine supplied by Ineos Chlor, around [REDACTED] per cent was supplied to water companies with the remaining [REDACTED] per cent supplied to industrial customers. Of the [REDACTED] tonnes of packaged chlorine products supplied by BOC, around [REDACTED] per cent was supplied to water

companies. Taking all distributors together, water companies represent around [X] per cent of sales (by volume).

TABLE 3 Sales to customers in Great Britain, by customer type, 2007

	BOC		Ineos Chlor		All distributors	
	Total value £'000	Total volume tonnes	Total value £'000	Total volume tonnes	Total value £'000	Total volume tonnes
Industrial	[X]	[X]	[X]	[X]	[X]	[X]
Water	[X]	[X]	[X]	[X]	[X]	[X]
Not known	[X]	[X]	[X]	[X]	[X]	[X]
All customers	[X]	[X]	[X]	[X]	[X]	[X]

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Notes:

1. All distributors includes sales by BOC, Ineos Chlor, Albion and Air Products. We exclude sales by Gerling Holz.
2. We only include sales to customers in Great Britain.

TABLE 4 Sales to customers in Great Britain, by customer types, 2007

	BOC		Ineos Chlor		All distributors		per cent
	Total value	Total volume	Total value	Total volume	Total value	Total volume	
Industrial	[X]	[X]	[X]	[X]	[X]	[X]	
Water	[X]	[X]	[X]	[X]	[X]	[X]	
Not known	[X]	[X]	[X]	[X]	[X]	[X]	

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Notes:

1. All distributors includes sales by BOC, Ineos Chlor, Albion and Air Products. We exclude sales by Gerling Holz.
2. We only include sales to customers in Great Britain.

Margin data

BOC's margin data

7. Table 5 provides estimates of BOC's gross margin by product type. According to this evidence, [X]. Figure 1 shows that [X].

TABLE 5 BOC gross margin, 2003 to 2008

	per cent	
	Cylinder gross margin	Drum gross margin
2003	[X]	[X]
2004	[X]	[X]
2005	[X]	[X]
2006	[X]	[X]
2007	[X]	[X]
2008	[X]	[X]

Source: BOC.

FIGURE 1

Trends in BOC margins, 2003 to 2008

[REDACTED]

Source: BOC.

8. BOC told us that all distribution costs were excluded from the calculation of gross margin, and it was not able to split the costs associated with chlorine distribution from the costs associated with the distribution of other gases at the transaction level, so we have not been able to replicate the estimates using transaction-level data. As a result we place little weight on this evidence.

Ineos Chlor's margin data

9. Using annual customer-level sales and cost data, Table 6 shows Ineos Chlor's gross profit margins by product and customer type.¹ Gross margins include the cost of goods sold and haulage costs, but exclude fixed costs. We find that [REDACTED].

TABLE 6 **Ineos gross margins, 2007**

Customer type	per cent			
	33kg cylinder	71kg cylinder	860–875kg drum	965–1,000kg drum
Industrial	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
Water	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
All customers	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Source: CC analysis based on Ineos Chlor's data.

10. Table 7 shows Ineos Chlor's EBIT² margins by product and customer type. EBIT margins include the cost of goods sold, haulage costs and fixed costs. We find that Ineos Chlor [REDACTED]. Ineos Chlor [REDACTED].

¹We estimate a volume weighted average gross margin across customers.

²Earnings before interest and tax,

TABLE 7 Ineos Chlor EBIT margins, 2007

Customer type	per cent			
	33kg cylinder	71kg cylinder	860–875kg drum	965–1,000kg drum
Industrial	[✂]	[✂]	[✂]	[✂]
Water	[✂]	[✂]	[✂]	[✂]
All customers	[✂]	[✂]	[✂]	[✂]

Source: CC analysis based on Ineos Chlor's data.

11. Figure 2 shows the trend in Ineos Chlor's gross margin over the period 2003 to 2008, by product type. We find that margins on drums [✂]. In contrast, [✂].

FIGURE 2

Ineos Chlor gross margin, by product type

[✂]

Source: CC analysis based on Ineos Chlor's data.

Prices

12. We have used volume and value sales data for Ineos Chlor, BOC, Albion and Air Products to calculate the weighted average revenue per tonne (WART) of chlorine sold, by customer and product type.³ We use this measure as a proxy for weighted average selling prices (WASP).
13. We derive WART for different customer and product types by weighting the price each customer receives in a given period by the size of the transactions in that period.

$$WART_t = \sum_{i=1}^N \left(\frac{R_{it}}{\sum_{i=1}^N R_{it}} * P_{it} \right)$$

³We use monthly customer-level sales data for Ineos Chlor and Albion, annual customer-level sales data for BOC and annual sales data for Air Products to calculate these prices.

Where $WART_t$ is the weighted average revenue per tonne in period t, R_{it} is the revenue received from customer i (of N) in period t, and P_{it} is the price paid by customer i in period t. This approach places more weight on prices associated with larger transactions and less weight on those prices associated with smaller transactions.⁴

14. One limitation with this approach is that it assumes that each individual customer pays a single price within a given period. In reality, a customer may be charged different prices for multiple transactions within that period and also might be charged different prices for different units of the same product within the same transaction. In essence, we are ‘smoothing’ out some of the variation in the average selling price.

15. Table 8 shows the WART of products sold to all customers for 2007. Cylinders are more than twice as expensive (per kg of chlorine purchased) than drums. Industrial customers pay significantly more for cylinders than the water companies (this is likely to represent higher costs as the margins earned are comparable). The difference between drum prices is relatively small between the two customer types.

TABLE 8 **Weighted average revenue per tonne of supply—2007**

	Cylinders		All cylinders	Drum		All drum
	33–39kg	71kg		800–875kg	965–1,000kg	
Industrial	£	£	£	£	£	£
Water	£	£	£	£	£	£
Not known	£	£	£	£	£	£
Overall	£	£	£	£	£	£

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Notes:

1. Includes all sales by BOC, Ineos Chlor, Albion and Air Products to customers in Great Britain (excluding the Channel Islands and Isle of Man) in 2007.
2. All cylinders includes cylinders less than 30kg, as well as some 56kg cylinders.

⁴For example, a customer may buy 100 tonnes of chlorine at £500 per tonne, whilst another may buy 0.5 tonnes at £3,000 per tonne. The ASP would be £1,750 per tonne, whilst the WASP would be £512 per tonne.

16. Figure 3 shows the distribution of prices, by customer and product type. The boxes represent the range of the middle 50 per cent of prices. The median price is indicated by the horizontal line running through each box. We find that there is more variation in the prices paid for cylinders, and that this variation is greatest for industrial customers. There is very little variation in the price paid for drums, even between different customer types.

FIGURE 3

**Distribution of weighted average revenue per tonne,
by customer and product type, 2007**

[✂]

Source: CC analysis based BOC, Ineos Chlor, Albion and Air Products data.

Notes:

1. We exclude cylinders less than 30kg and 56kg cylinders.
2. Excludes outside values ie those more than one-and-a-half interquartile ranges above the upper quartile or below the lower quartile.

17. Figure 4 shows the price trend of cylinders and drums for BOC and Ineos Chlor over the period 2001 to 2007. [✂] We found that Ineos Chlor's prices for cylinders and drums [✂] than BOC's, [✂].

FIGURE 4

**BOC and Ineos Chlor weighted average revenue per tonne,
by packaging 2001 to 2007**

[✂]

Source: CC analysis based BOC and Ineos Chlor's data.

Notes:

1. Cylinders includes cylinders ranging in size from 1kg to 71kg.
2. Drums includes drums ranging in size from 860kg to 1,000kg.