

Switching from new steel drums to alternatives

1. In this appendix, we present evidence on switching from steel drums to other industrial packaging and vice versa, including:
 - Greif's analysis of the impact of costs of steel and plastic on sales of steel drums;¹
 - data on market trends for steel drums, plastic drums and IBCs (sales and prices);
 - data provided by Greif and Blagden on customer switching and customers won or lost; and
 - evidence from the customer survey and from customers and competitors.
2. We had difficulty in obtaining reliable and consistent data for our analysis. There are no reliable, comprehensive sets of figures for all industrial packaging. Figures from SEFA included data collected from different numbers of countries in different years. Figures from the IPA did not include data from certain manufacturers and in some cases the figures were based on estimations rather than firm data. We therefore compiled our own estimates from figures collected directly from individual manufacturers as well as from the estimates provided by the IPA, and by SEFA and by Greif.
3. One important question for our analysis was the extent to which an overall increase in the price of steel drums (relevant for market definition), or in the price of steel drums charged by Greif or the merged parties (relevant for assessment of competitive constraints), could be expected to lead to significant switching from steel drums to alternatives such as plastic drums and IBCs.
4. We reviewed Greif's analysis of the relationship between the evolution of relative costs of main inputs (steel and plastic) and demand for new large steel drums. The results indicated that, for the Europe-wide sample provided, in most years sales of steel drums decreased when relative steel prices increased and vice versa. In the UK, the correlation was unclear. Further, we did not observe a clear correlation, in every year, between input prices (steel and plastic) and output prices (steel drums, plastic drums and IBCs).
5. The customer survey found that around a third of customers could currently switch some of their orders to alternative packaging, accounting for around 15 per cent of annual expenditure. When asked what proportion of their requirements they had switched in the last 12 months, the responses implied that around 6 per cent by value of total orders had been switched. When asked what were the realistic alternatives to each type of new large steel drum, around two-thirds of the respondents who used tight-head drums identified alternatives, and over half of those who used open-head drums identified alternatives. These responses might indicate that customers perceived the longer-term potential for switching to be greater than was currently worthwhile or readily realizable.

¹In the text we use the term 'sales' to refer to the volume of sales (not their value), whether measured in numbers of drums or tonnage. In figures and tables the unit of measurement is defined.

6. As we discuss in the following section, it did not appear that the decrease in sales of steel drums was mirrored by increases in sales of other packaging. Indeed, sales of plastic drums appeared to have been stable over much of the sample period and sales of IBCs increased only by about half of the observed decrease in sales of steel drums. Since IBCs use both steel and plastic as inputs, it was difficult to infer a relationship between this change and changes in relative input prices.
7. The extent to which changes in sales of steel drums were related to movements in relative prices was also unclear. It was possible that changes in sales of steel drums were explained by factors other than changes to their price relative to plastic drums and IBCs. Greif's analysis explained the persistent fall in sales of steel drums in the UK by a general fall in demand for packaging due to a decline in manufacturing. Greif subsequently told us that the overall UK chemicals industry was growing, at least in value terms, and attributed falls in demand for packaging to switching to bulk transport. However, we noted that there might have been factors that affected both the price of steel and the demand for packaging, thus making the two variables appear to move together. The data needed to be interpreted with caution, but we noted that our estimates did not support the assertion that there had been significant switching from new large steel drums to other packaging as a result of price differentials.

Greif's analysis of the impact of steel and plastic costs on steel drum volumes

8. Greif submitted an analysis (prepared by LECG) on the extent to which sales of steel drums were affected by changes in the relative cost of steel and plastic drums. This analysis showed that, over the period 1994 to 2005, in most years annual European sales of steel drums had increased when the steel input costs decreased relative to plastic input costs, and had decreased when steel costs increased relative to plastic costs. The paper concluded that EU sales of steel drums depended on the relative price of steel and plastic drums, and therefore that these were part of the same relevant market.
9. However, this conclusion should be subject to certain caveats:
 - The analysis was based on changes in relative input costs (in the absence of data on the relative prices of steel and plastic drums). This approach would have been valid so long as prices of plastic and steel drums varied proportionately to input prices. However, the data did not always support the assumption that Greif's prices of steel drums tracked changes in input costs—see paragraph 10.
 - The analysis was based on European data. When the same analysis was applied to UK data, the result was inconclusive. The paper explained this by reference to the general decline in UK steel drum sales, which could not be disentangled from relative price effects.
 - We had some reservations about the reliability of the sales data provided by SEFA which was used in this analysis. SEFA told us that the figures had a margin of error of 5 to 10 per cent, for a number of reasons: it did not always get input from all members in each year; there could be mistakes in reporting; and there were variations in membership from year to year (SEFA told us that, in 2000 and 2001, the EU data contained sales by 14 member countries, 13 in 2002, and 12 from 2003).
10. In the absence of data on UK and European prices of steel drums and plastic drums, the paper used data on the input prices of steel (the MEPS index) and of plastic (the HDPE index) as a proxy for the output prices. The paper argued that there was a

correlation between the MEPS EU price of steel and Greif's price per drum. However, the relationship was far from clear (see Figure 1 below, which reproduces Figure 2 of Greif's analysis). Between Q2 2002 and Q4 2003, Greif's drum prices fell in real terms, even though steel prices increased; between Q4 2003 and Q4 2004 Greif's prices increased with steel prices. However, again from Q1 2005 they moved in different directions. Therefore, the price of steel might not always have been a fully appropriate proxy for the price of steel drums.

FIGURE 1

Greif real drum price compared with EU real steel price



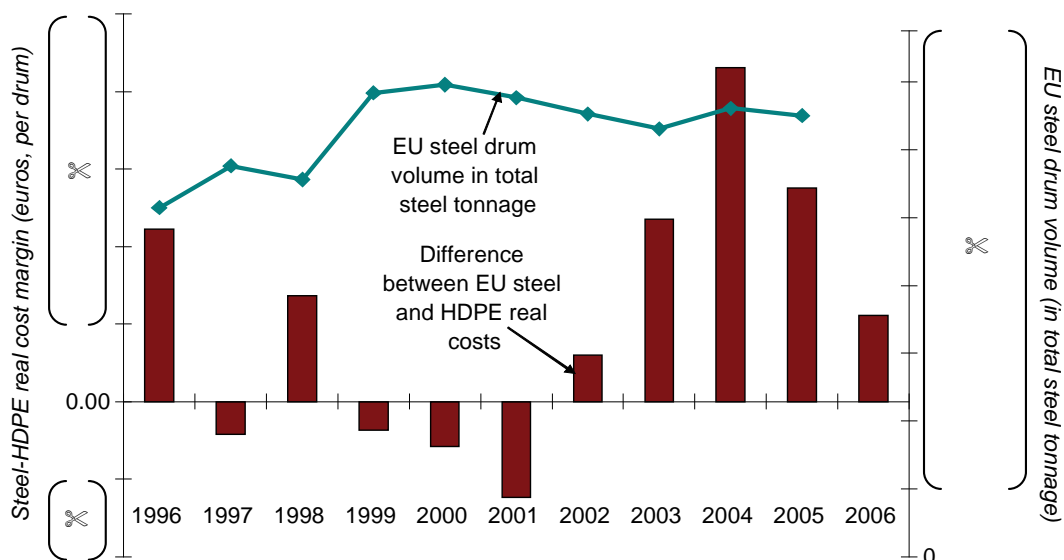
Source: Greif.

Note: Greif assumed that 17.5kg of steel is used per steel drum and 8.5kg of HDPE per plastic drum. Greif data lagged by two quarters. For the EU level Producer Price Index (PPI) Greif used the Total industry (excluding construction) PPI and for the UK the Output prices excluding excise duty PPI (PVNP) to adjust for inflation, both with a base year of 2000.

11. With these caveats, the analysis showed a correlation between changes in the relative costs of steel and of plastic and EU sales of steel drums: EU sales of steel drums increased when plastic costs increased relative to steel, and vice versa, in six out of the nine years analysed (see Figure 2). It should be noted that, in 2004 (the year in which steel drum prices increased in line with steel costs according to Figure 1), sales increased even though steel costs increased relative to plastic costs. Also the analysis looked only at changes in sales of steel drums rather than changes in sales of steel drums relative to sales of plastic drums. Indeed, there was no official data on sales of large plastic drums.

FIGURE 2

Steel-HDPE real cost margin and EU steel drum volume (in total steel tonnage)



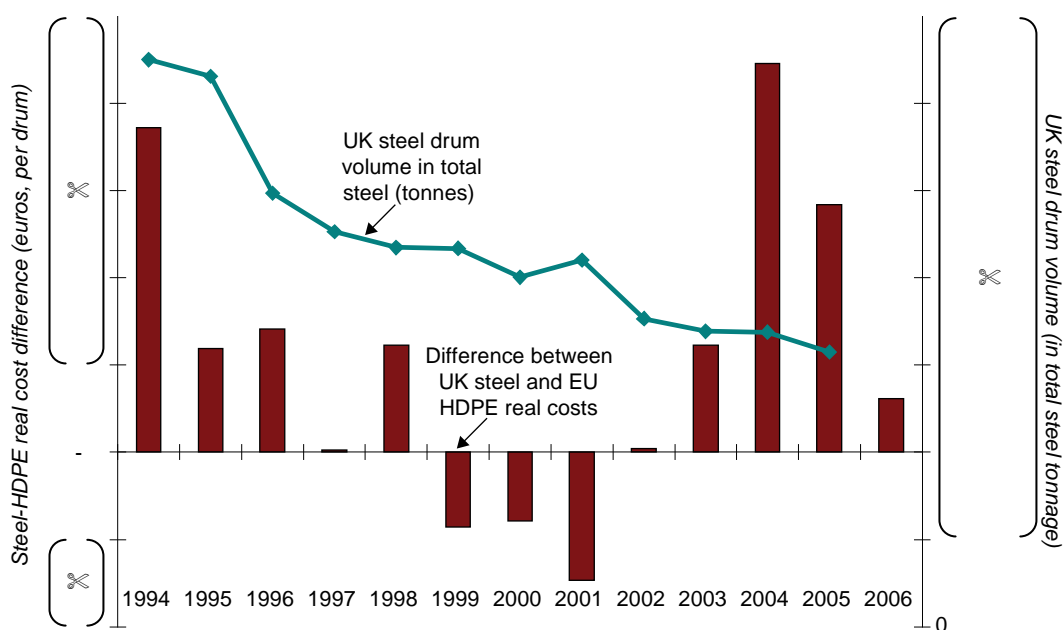
Source: Greif.

Note: Greif estimated the volume for 2005 by annualizing the volume for the first six months. Data includes steel drums 185 to 250 litres. Greif assumed that 17.5kg of steel is used per steel drum and 8.5kg of HDPE per plastic drum. For the EU level PPI, Greif used the Total industry (excluding construction) PPI to adjust for inflation, with a base year of 2000.

12. It was not possible to deduce elasticities from this analysis because of lack of data on prices of steel and plastic drums. Based on data on average EU prices of steel drums for 2002 to 2005, Greif estimated the changes in prices of steel drums relative to those of plastic drums implied by changes in the cost of steel relative to plastic. This showed that changes in drum prices had not always moved with changes in costs (in 2003 and 2005, EU average prices decreased even though there had been an increase in input costs).
13. Greif conducted a similar analysis using UK volume data. The results were less conclusive because steel drum sales had been falling in every year in the UK except 2001, and Greif did not have data on the relative share of sales of steel and plastic drums. The paper explained this fall in sales of steel drums by the general fall in demand for steel drums in the UK due to a decline in manufacturing.
14. Greif argued that 'there is still some evidence that the volume of steel drums sold is affected by the cost differential relative to plastic'. Indeed, Figure 3 suggests that the periods of strong increases in prices of steel relative to plastic were generally associated with steep falls in sales of drums, although there were some exceptions (notably 1997, when a strong fall in the price of steel relative to plastic was associated with a 9 per cent fall in sales).

FIGURE 3

Steel-HDPE real cost difference vs UK steel drum volume (in total steel tonnage)



Source: Greif.

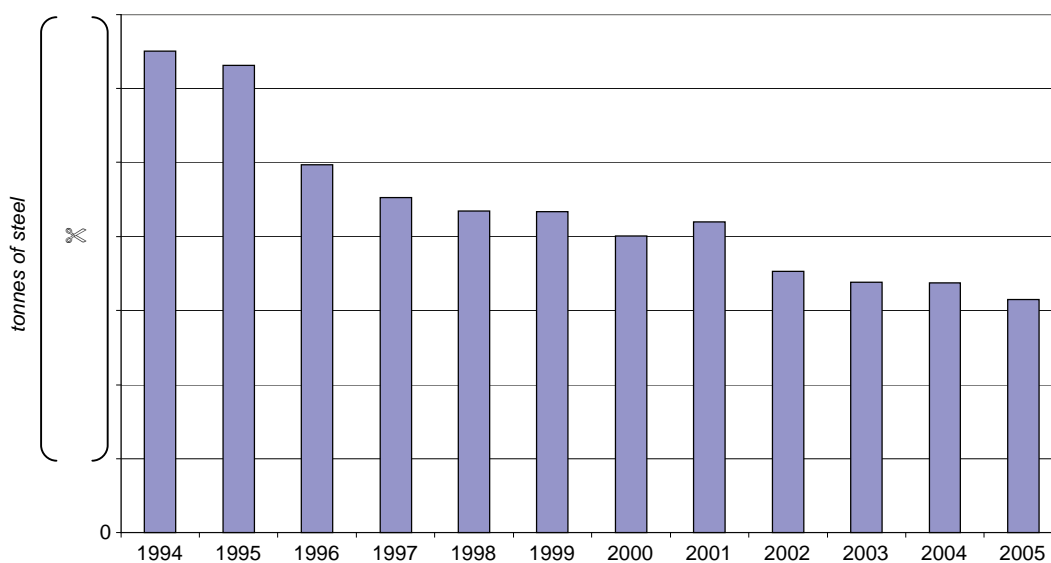
15. The analysis done by Greif therefore showed a correlation between EU sales of steel drums and the cost of steel relative to plastic. But the correlation was not clear for UK sales. The analysis was limited by a lack of data on prices of steel and plastic drums, as well as a lack of data on sales of plastic drums, and because of the imprecision in the data provided by SEFA on sales of steel drums. For this reason, we undertook an analysis of UK sales of steel and plastic drums using data on drum prices.

Trends in prices and sales of large steel drums, large plastic drums and composite IBCs

16. The demand for large steel drums has decreased in the UK over the past ten years (by around 40 per cent according to IPA estimates). In the same period, prices of steel drums have been increasing, driven by increases in the cost of steel of about 40 per cent in real terms.
17. Data provided by SEFA to the parties is set out in Figure 4. It showed the changes in large steel drum volumes in the UK, over a 12-year period (1994 to 2005). The estimates compiled by SEFA showed a steep decline in steel drum sales. Between 2003 and 2005, they showed a 7 per cent decline in UK sales.

FIGURE 4

UK volume of steel drums (in tonnes)

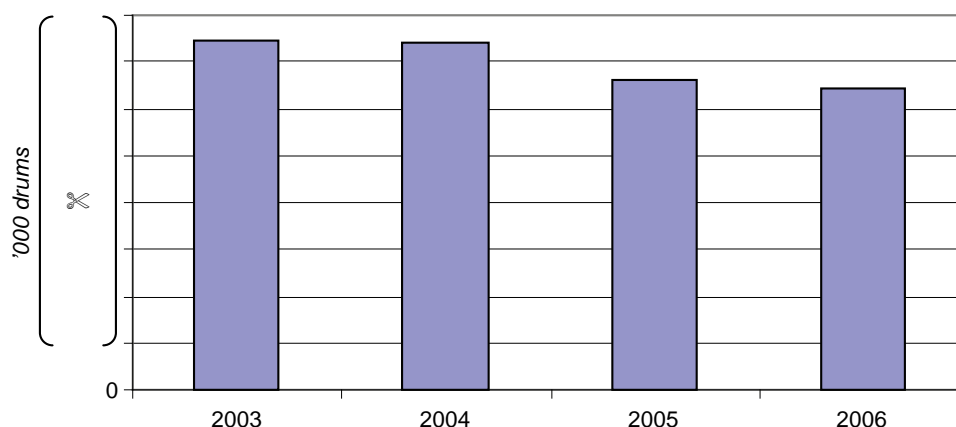


Source: Greif, based on SEFA data.

18. Figure 5 shows IPA estimates of the total sales of large steel drums in the UK, compiled from data provided by its members. This data did not include sales by [X], or imports, and therefore underestimated total UK sales of steel drums. According to this data, total sales by IPA members of steel drums fell by [X] per cent over four years, from [X] million in 2003 to [X] million in 2006.

FIGURE 5

IPA data on volumes of large steel drums sold in the UK



Source: IPA.

19. We compiled our own estimate of the total sales of new large steel drums in the UK by asking all UK manufacturers to provide data on their annual sales of new large steel drums. This is reproduced in Table 1. According to this data, total UK sales of large steel drums were 3.7 million in 2006. We considered that this gave a more reliable estimate of total sales of new large steel drums, as it included sales by [redacted], which were not included in the IPA data. Although imports were not included, these appeared to be few at present (see Appendix F). Between 2003 and 2006, sales fell by 10 per cent, from 4.1 million to 3.7 million. Most of this fall was in 2005.

TABLE 1 Total sales of new large steel drums by UK manufacturers, 2002 to 2006

	'000 drums				
	2002	2003	2004	2005	2006
Blagden					
Greif					
Ramsden and Whale					
Metal Drum					
AW Stokes					
T&D			0	0	0
Total UK sales of large steel drums	4,208	4,084	4,176	3,749	3,680
Year-on-year changes in market size (%)		-3	2	-10	-2

Source: CC, based on data on calendar year sales provided by Greif, Blagden, Metal Drum, AW Stokes and Ramsden and Whale.

20. Greif estimated that whilst sales of large steel drums had decreased in the UK, sales of large plastic drums had grown from approximately [redacted] units in 2001 to [redacted] units in 2006. However, Harcostar (the leading supplier of large plastic drums in the UK, with a share of sales of around [redacted] per cent) told us that the total sales of plastic drums in the UK were of the order of [redacted] million units a year, and that sales had remained broadly static over the past three to five years. Harcostar told us that growth in sales of plastic drums at the expense of steel drums had been offset by switching to IBCs and by the decline in the UK manufacturing base.
21. Sales of IBCs in the UK have increased in the past five years. Greif estimated that sales of IBCs in the UK had grown from [redacted] units in 2001 to [redacted] units in 2006. IBCs contain about five times the amount of product that can go into a steel drum, and

therefore on a 'like-for-like basis', total IBC sales in the UK would be equivalent to [redacted] million drums in 2006 (close to the total sales of steel drums of 3.7 million units).

22. The IPA also provided estimates on total sales of composite 1,000-litre IBC sales (including both new IBCs and reconditioned IBCs) and sales of large plastic drums (100 to 250 litres)—see Table 2. They showed an overall increase in IBC sales of [redacted] per cent between 2003 and 2006.

TABLE 2 IBC sales volumes

	'000 units			
	2003	2004	2005	2006
1,000 litres (complete manufacture)	(
1,000 litres (remake = new inner bottle only)			✂	
Total				
Total volumes in drum equivalent)			
Year-on-year change in volumes (%)		4	1	1
Large plastic drums (100–250 litres)	(✂)	

Source: IPA.

23. The IPA also provided data on sales of reconditioned steel drums. This is shown in Table 3. According to the IPA data, sales of reconditioned drums decreased from [redacted] million in 2003 to [redacted] million in 2006 (a [redacted] per cent fall). As set out in paragraph 66, we were told that there was a shortage of steel drums suitable for reconditioning. This probably explained the drop in sales.

TABLE 3 Sales of large reconditioned drums

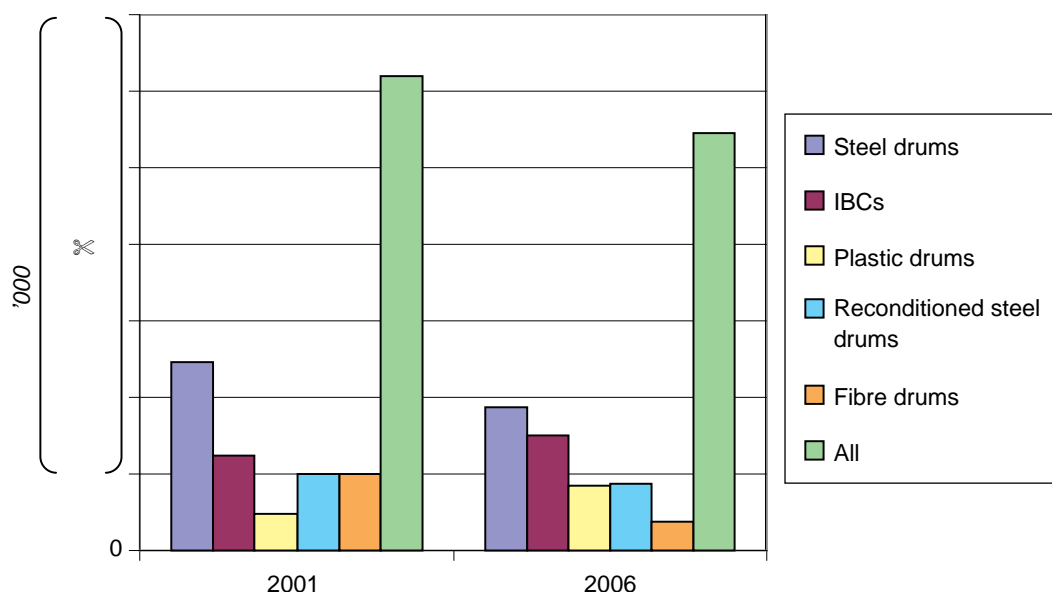
	'000 drums			
	2003	2004	2005	2006
Sales of large reconditioned drums	(✂	
Year-on-year change (%)				

Source: IPA.

24. Figure 6 shows Greif's estimates of the changes in sales of IBCs, new large steel drums, reconditioned large steel drums, fibre drums and large plastic drums in the UK in 2001 and 2006. They suggested that overall sales of these types of packaging declined by [redacted] per cent over five years, from [redacted] million to [redacted] million drums; and that sales of IBCs and plastic drums rose at the expense of sales of new and reconditioned steel drums and of fibre drums.

FIGURE 6

Sales of IBCs, plastic drums, fibre drums and steel drums in the UK



Source: Greif.

Note: IBC volume sales have been multiplied by 5 in order to make them comparable to sales of large steel and large plastic drums.

25. Table 4 shows the CC's estimates (based on data from manufacturers and the IPA) of annual sales of different types of packaging for the years 2003 to 2006.

TABLE 4 Annual sales of large packaging, 2003 to 2006

	'000 drums sold			
	2003	2004	2005	2006
New large steel drums	4,084	4,176	3,749	3,680
Reconditioned large steel drums	2,330	1,930	1,765	1,755
IBCs*	3,290	3,415	3,450	3,500
Large plastic drums	<u>1,680</u>	<u>1,688</u>	<u>1,700†</u>	<u>1,700†</u>
Total	11,384	11,209	10,664	10,635

Source: CC estimates, based on data provided by manufacturers and the IPA.

*The unit for IBC sales is number of IBCs sold multiplied by 5.

†We do not have data on sales of large plastic drums in 2005 and 2006; these figures are based on what we were told by the IPA and Harcostar of a broadly flat market and by Greif of sales of around 1.7 million in 2006; if there had been some growth in plastic drum sales, we believe that is unlikely to have been higher than 5 per cent in each year—which would not make a material difference.

26. In 2005, sales of new steel drums dropped by 427,000, and sales of reconditioned large steel drums by 165,000. IBC sales increased by the equivalent of 50,000 drums. We did not have data on sales of plastic drums in 2005 and 2006. However, we understand from Harcostar and the IPA that they did not increase materially. Some sales of steel drums might have been lost to other types of packaging. However, we heard from a number of sources that a significant proportion of the losses was due to the overall decline in the demand for large packaging by companies in the UK.

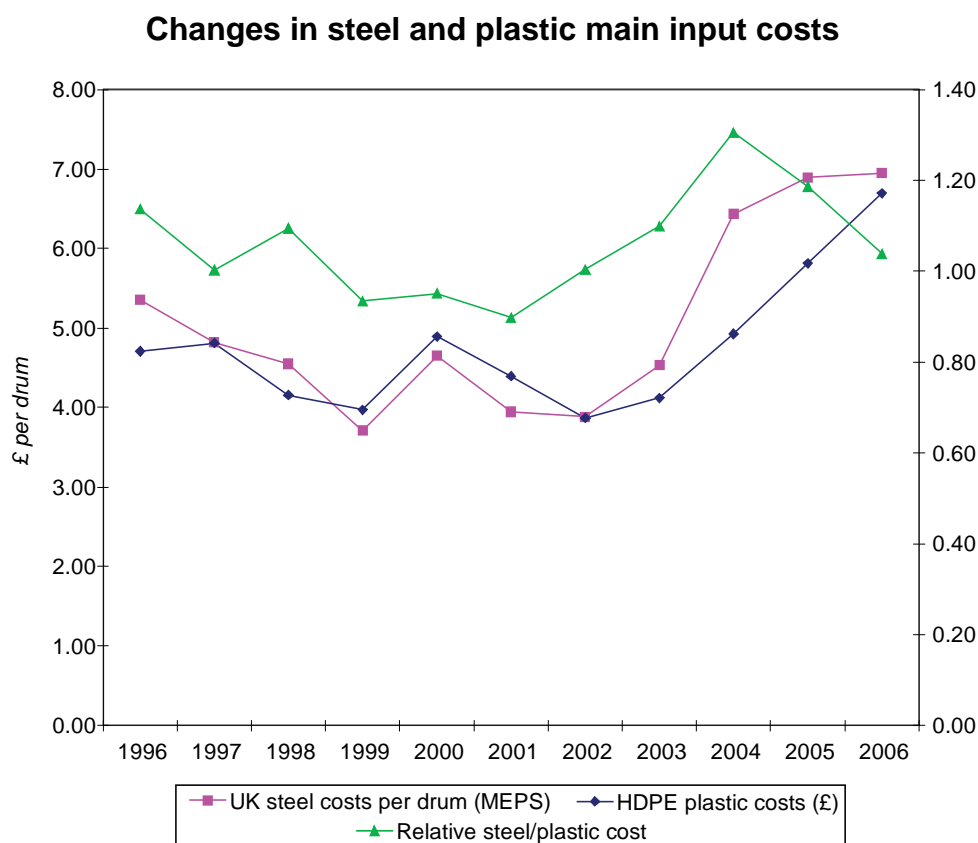
Prices

27. Prices of steel drums have increased in the past five years, driven by increases in the cost of steel. Prices of plastic drums have also increased driven by increases in the cost of HDPE (the main input in production of plastic drums). Prices of IBCs have not increased. We were told that although both steel and HDPE were inputs to the production of IBCs, increasing competition between IBC manufacturers had tended to drive prices down.

Input prices (steel and plastic)

28. Figure 7 shows the changes in UK steel costs (based on the UK MEPS index), the changes in plastic costs (based on the EU HDPE index), and the changes in the cost of steel relative to plastic. The gap between steel and plastic cost per drum was at its highest in 2004, and subsequently decreased. Figure 7 also shows that, currently, the gap between steel and plastic costs is relatively low.

FIGURE 7



Source: CC, based on data provided by Greif.

Note: HDPE EU index was converted into pounds using the average annual exchange rate in each year.

29. Based on the data on changes in the prices of the main inputs to steel and plastic drums, we attempted to calculate the implications of these changes for the prices of steel drums and plastic drums: see Table 5. We assumed that drum prices only changed to reflect the change in the material input costs of producing them, and that their price changed in the same year as the change in input costs. This was a bold assumption: other factors were likely to have influenced the pricing of drums. However, we were told by the parties that many customer contracts had price clauses

that enabled quarterly revisions of steel drum prices in line with the MEPS index. Therefore we would expect drum prices to have changed in the same direction as input prices. The estimates below are purely illustrative, and provided in order to ensure that the data on steel and plastic drum prices analysed in paragraph 31 onwards was broadly consistent with the data on input cost changes.

30. Table 5 tells us that, if drum prices had increased exactly with material costs, the increase in the price of steel drums would have been around 5 per cent in 2003 and 14 per cent in 2004. The price of steel drums would have increased relative to the price of plastic drums in 2004 by around 8 per cent, and decreased by around 3 per cent in 2005 and 6 per cent in 2006.

TABLE 5 Changes in steel and plastic prices and implied changes in drum prices

Year	Cost of steel per steel drum (based on MEPS UK nominal steel prices) £	Cost of HDPE per plastic drum (based on EU HDPE index) £	Year-on-year change in steel cost per drum £	Year-on-year change in HDPE costs per drum £	% change in price of steel drum (assuming a price of around £14) %	% change in price of plastic drum (assuming a price of around £14) %	Implied increase in price of steel drums relative to plastic drums %
2001	3.94	4.39					
2002	3.88	3.87	-0.06	-0.52	-0.4	-3.7	3.3
2003	4.53	4.12	0.65	0.25	4.6	1.8	2.8
2004	6.43	4.93	1.90	0.81	13.6	5.8	7.8
2005	6.89	5.81	0.46	0.88	3.3	6.3	-3.0
2006	6.95	6.69	0.06	0.88	0.4	6.3	-5.9

Source: CC, based on data provided by Greif.

Drum prices

31. The parties provided data on the prices of the different types of steel drum they produced. In Table 6, we show Greif and Blagden's average price per drum for all large steel drum sales for calendar years 2002 to 2006, as well as the average price per plain tight-head drum for calendar years 2003 to 2006 (tight-head plain drums account for the majority of sales of large steel drums in the UK). [X]

TABLE 6 **Blagden and Greif average prices per drum**

	£					
	2002	2003	2004	2005	2006	
Blagden all large steel drums	(
Blagden large plain tight-head steel drums						
Greif all large steel drums				✂		*
Greif large plain tight-head steel drums			†			*
)	
					<i>per cent</i>	
<i>Year-on-year changes</i>						
Blagden all large steel drums	(
Blagden large plain tight-head steel drums						
Greif all large steel drums				✂		
Greif large plain tight-head steel drums						
)	

Source: CC, based on Greif and Blagden data, calculated over calendar years.

*Average price for January 2006 to October 2006.

†Greif provided data on prices of tight-head drums only from November 2003 onwards, and therefore this figure is the average revenue over November and December 2003.

Note: Average prices are calculated as total revenue divided by total volumes in each period.

32. We were also provided with data on prices of large plastic drums, IBCs and reconditioned large steel drums by Harcostar, Schütz and pack2pack. Harcostar is the largest supplier of large plastic drums in the UK (with a share of around [✂] per cent); Schütz is the largest supplier of IBCs in the UK (with a share of around [✂] per cent); pack2pack is the largest supplier of reconditioned drums in the UK.

TABLE 7 **Large plastic drum, reconditioned steel drum and IBC prices**

	£					
	2002	2003	2004	2005	2006	
Harcostar large plastic drum average prices	(
Schütz IBC average prices						
pack2pack average prices for washed steel drums				✂		
pack2pack average prices for furnaced steel drums						
)	
					<i>per cent</i>	
<i>Year-on-year changes</i>						
Harcostar large plastic drum average prices	(
Schütz IBC average prices						
pack2pack average prices for washed steel drums				✂		
pack2pack average prices for furnaced steel drums						
)	

Source: CC, based on data provided by Harcostar, Schütz and pack2pack.

Note: Average prices are calculated as total revenue divided by total volumes in each period.

33. Table 8 compares the changes in the prices of drums (calculated from the data we obtained on new steel drum and plastic drum prices) with changes in the prices that would be implied if drum prices only changed to reflect changes in steel or HDPE costs. It appears that in 2003 and 2004 prices of plastic drums [✂]; but that in 2005 and 2006 they [✂]. In 2004 and in 2006 prices of new steel drums [✂]. In 2005 they [✂].

TABLE 8 Changes in plastic and steel drum prices

	<i>per cent</i>			
	2003	2004	2005	2006
Large plastic drum <i>Change implied by plastic cost changes*</i>	(
Blagden large plain tight-head steel drum <i>Change implied by steel cost changes*</i>			✂	
Greif all large steel drums <i>Change implied by steel cost changes*</i>				
)			

Source: CC, based on data provided by Greif, Blagden and Harcostar.

*These values should only be interpreted as indicative as they are based on approximations.

34. In Table 9, we relate changes in prices of drums to the changes in sales of steel drums. The data on prices and sales of steel drums was based on the parties' (and other UK manufacturers') data on sales. For Blagden prices, we show the prices of large plain tight-head drums as these were more comparable over time than average drum prices. For Greif, we show average prices of large steel drums, as we have price data for Greif's tight-head drums only for 2003 to 2006 (but it can be seen from Table 6 that, in those three years, changes in the price of Greif's tight-head drums were similar to changes in the average price of all Greif's large steel drums). The data on prices of large plastic drums, IBCs and reconditioned drums was also based on manufacturers' own data. In each case the market leader provided the pricing data. The estimates of sales of new large steel drums were based on each manufacturer's sales; the estimates of sales of IBCs, reconditioned drums and plastic drums were based on estimates provided by the IPA and manufacturers.

TABLE 9 Changes in prices and in volumes, 2003 to 2006

	2003	2004	2005	2006
<i>Price changes (%)</i>				
Harcostar large plastic drums				
Schütz IBC average prices				
pack2pack average prices for washed large steel drums				
pack2pack average prices for furnaced large steel drums				
Blagden large tight-head steel drums				
Greif all large steel drums				
<i>Change in price of steel drum minus change in price of plastic drums (%)</i>				
Based on Blagden prices				
Based on Greif prices				
<i>Change in price of steel drums minus change in price of IBCs (%)</i>				
Based on Blagden prices				
Based on Greif prices				
<i>Changes in volume sales</i>				
New steel drum sales (%)				
New steel drum sales ('000 drums)				
IBC sales (%)				
IBC sales growth (number of IBCs, in drum equivalents and in '000)				
Reconditioned drum sales (%)				
Reconditioned drum sales ('000 drums)				
Large plastic drum sales (%)			*	*
Large plastic drum sales ('000 drums)			*	*

Source: CC, based on data provided by Greif, Blagden, MDC, AW Stokes, Ramsden and Whale, Harcostar, Schütz, IPA.

*These are our estimates based on information from the IPA and Greif; if there had been some growth in plastic drum sales, we believe (based on the information provided by Harcostar on its sales) that that is unlikely to have been higher than 5 per cent in each year—which would not make a material difference.

35. There appeared to be an inverse relationship between the changes in the price of new large steel drums relative to the price of large plastic drums, and changes in sales of new large steel drums, with a one-year lag. The one-year lag would be consistent with the existence of switching costs for customers, as discussed below. In 2003, the price of new large steel drums relative to the price of large plastic drums decreased by 2 per cent, and this was followed in 2004 by a 2 per cent increase in sales of new large steel drums. In 2004, the price of new large steel drums relative to the price of large plastic drums increased by 10 to 13 per cent, and this was followed by a 10 per cent drop in sales in 2005. In 2005, the direction of the change was not clear (and the relative price may have remained stable on average), and this was followed in 2006 by a small, 2 per cent, drop in sales of new large steel drums.
36. The changes in sales of steel drums, as relative prices of steel and plastic drums changed, did not, however, appear to be mirrored by changes in sales of plastic drums. Using the best data available to us, we could not conclude that the reduction in the sales of steel drums following increases in relative prices could be attributed to any significant degree to switching to plastic drums.
37. There was no clear relationship between changes in the relative prices of steel drums and IBCs, and changes in sales of new large steel drums. Prices of new large steel drums went up compared with prices of IBCs throughout the period, but the estimates of IBC sales suggested that only a proportion of the lost sales of new large steel drums was switched to IBCs.
38. As for reconditioned large steel drums, prices of new large steel drums increased relative to prices of reconditioned drums in all years except 2006. Sales of re-

conditioned drums decreased compared with sales of new steel drums in 2003, and then remained fairly stable. As set out in paragraph 66 below and paragraphs 6.8 and 6.9 of our findings, we were told that the supply of reconditioned drums had been limited in recent years by shortages in the availability of steel drums to be reconditioned. This might explain why customers could not switch more from new large steel drums to reconditioned drums.

39. Overall, this analysis suggested that sales of new large steel drums declined as prices of large steel drums increased. There might have been some switching to large plastic drums and IBCs in response to the increase in the price of new large steel drums relative to the prices of large plastic drums and IBCs but neither the data nor our analysis confirmed this. Even if we took all the change in sales of steel drums to have been a result of relative price changes, the switching to plastic drums and IBCs in response to changes in relative prices would have been less than the critical loss level (which was calculated as [%] to [%] per cent loss in sales in response to a 5 per cent price increase). In 2004, prices of large steel drums increased by 10 to 13 per cent relative to prices of large plastic drums, and this was followed by a 10 per cent fall in new large steel drum sales in 2005. Part of this fall in sales was likely to be due to a fall in overall UK demand for large packaging rather than to switching. Indeed it appeared that sales of IBCs and of large plastic drums did not increase as much as sales of large steel drums decreased.
40. The decrease in sales of steel drums that was observed to follow relative price increases was smaller than that which would be required to make a 5 per cent price increase unprofitable (by the hypothetical monopolist). However, there were uncertainties about some of the underlying data. We did not rule out the possibility that switching could have constituted some limited competitive constraint on the merging parties' ability to raise prices.

Current price differentials between steel and plastic and between steel drums, plastic drums and IBCs

41. According to the data in Table 5, at present the differential in steel and plastic input costs is around £0.26 per drum. This differential is small compared with the levels reached in the recent past. In 2004, the differential in costs reached its maximum at £1.50 per drum. This would suggest that steel input costs could increase by more than £1.20 per drum above current levels before reaching the differential with plastic input costs observed in 2004—an 8 to 9 per cent increase.
42. We also did a calculation based on current prices of new large steel and large plastic drums. Based on the data on drum prices in Tables 6 and 7, Table 10 shows by how much prices of new large steel drums could increase from their current levels (all other things being equal) before reaching the differential that was observed in 2004, which it appears prompted a significant fall in sales of new large steel drums. Depending on which measure of prices of new large steel drums was used, the increase in price of new large steel drums that was needed to reach 2004 differentials was between £[%] and £[%] per drum—an increase of between [%] and [%] per cent.

TABLE 10 **New large steel drum and large plastic drum price differential**

<i>Differential between new large steel drum prices and large plastic drum prices (Harcostar)</i>	2003	2004	2005	2006	<i>% increase in 2006 new large steel drum prices in order to reach 2004 differentials</i>
Blagden all large steel drums Blagden large plain tight-head steel drums Greif all large steel drums Greif large plain tight-head steel drums				✂	

Source: CC, based on Greif, Blagden and Harcostar data.

43. With regard to the differential between the price of new large steel drums and the price of IBCs, because prices of new large steel drums increased faster than prices of IBCs throughout the period, the differentials in prices were at their highest in 2005 and 2006.

Summary of the evidence on market trends for new large steel drums, large plastic drums and IBCs

44. Sales of new large steel drums declined in the past ten years. This decline coincided with some moderate increases in sales of other packaging (large plastic drums and IBCs), and an overall decline in the demand for large packaging. The periods of greatest falls in sales of new large steel drums were 1997, 2000, 2002 and 2005.
45. Since 2002, UK prices of new large steel drums have increased sharply. The gap between prices of plastic and steel reached its maximum in 2004; the gap then declined as plastic prices increased faster than steel prices. The same pattern was evident in the prices of new large steel drums and large plastic drums: the gap between the price of new large steel drums and the price of large plastic drums reached its widest in 2004, and then narrowed.
46. The large increase of around 10 to around 13 per cent in prices of new large steel drums relative to prices of large plastic drums and IBCs in 2004 was followed by a 10 per cent (427,000 drums) fall in sales of new large steel drums in 2005. Although there may have been some switching to IBCs and large plastic drums, sales of IBCs did not increase strongly, and sales of large plastic drums were unlikely to have increased significantly. Much of the overall loss appeared to be due to a general decline in sales of packaging.
47. Because of recent increases in HDPE prices relative to steel prices, the gap between prices of new steel drums and prices of plastic drums is currently at its narrowest in four years. Prices of new large steel drums could increase by more than 5 per cent relative to large plastic drums before reaching the 2004 differential.

Evidence on switching provided by the parties

48. Greif provided data on switching by its larger customers from new large steel drums to large reconditioned drums, large plastic drums and IBCs, as well as specific examples of customers who had switched to other industrial packaging. Greif told us that the period in which most customers had switched away from new large steel to large plastic drums was in 2004, when steel prices were at their highest compared with plastic prices. Figure 8 shows the amount of switching by large customers in the

period 2004 to 2006. According to this, Greif's losses of large customer business to other types of packaging represented [redacted] of all losses of large customer business.

FIGURE 8

Greif steel drum losses on major contracts, 2004 to 2006



Source: Greif.

49. Table 11 shows the losses of large business by Greif to other packaging by type of packaging and year. Total losses of large business to other packaging were equivalent to [redacted] to [redacted] per cent of sales in the year. [redacted]

TABLE 11 Greif losses of large business, 2003 to 2006

	2003	2004	2005	2006
Volumes switched to:				
Fibre				
IBC				
Pallecons*				
Plastic				
Reconditioned				
Total				
Greif total volume sales				
Total losses to other packaging (% of sales)				

Source: CC, based on Greif.

*Pallecon is a trademark TNT packaging product; a metal frame fitted with rigid plastic panels locked on to a metal pallet, containing a disposable bag or liner that may hold 1,000 litres of food products.

50. Blagden also provided information on customer switching—see Figure 9 and Table 12. This showed that Blagden's gains and losses of customers to other types of packaging were much lower than gains and losses to other manufacturers of new large steel drums. There were also large variations from year to year. [redacted]

FIGURE 9

Blagden steel drum losses on major contracts, 2004 to 2006



Source: Blagden.

TABLE 12 **Blagden business gained and lost, 2002 to 2006**

			2003		2004		2005		2006	
	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss	Gain	Loss
European supply										
2002										
Total										

Source: Blagden.

Results on switching from the customer survey

51. Customers were asked to estimate the number of times that they had ordered alternative types of containers instead of new large steel drums in the past 12 months. Over 70 per cent of those responding to this question had not switched in the past year. Customers who had switched were asked for an estimate of the proportion of requirements switched to alternatives in the past 12 months. Combining these results with reported annual expenditures implied that, in the previous 12 months, 6 per cent of total order value was switched to alternatives by these respondents.
52. Customers who had switched were also asked which alternative they had switched to: the two most common were IBCs and reconditioned drums, followed by plastic drums. Price was repeatedly mentioned as the main reason for switching.
53. Customers were also asked what, if anything, would currently prevent them from switching from new large steel drums to an alternative type of container (see paragraph 35 of the customer survey report). The large majority of respondents identified barriers to switching to an alternative type of packaging (around 90 per cent of respondents). The majority of these felt that they would be prevented from switching to an alternative because of product requirements and regulations. Almost as many also felt that they would be prevented because of customer specifications and requirements.
54. We asked for estimates of the percentage of orders for all large steel drums, by value, that customers could currently switch to alternative containers. Around a third of customers said that they could currently switch some of their orders to alternative packaging. By weighting each response by the respondent's reported expenditure, we estimated that around 15 per cent of annual expenditure could currently be switched to alternative packaging (see Table 14 of the report). However, when asked what were the realistic alternatives to each type of new large steel drum, around two-thirds of the respondents who used tight-head drums identified alternatives, and over half of those who used open-head drums identified alternatives.²
55. Finally, customers were asked what they thought other similar customers would do in the event of a price increase from the merged entity, and what price increase would prompt them to react in the way they had described (see paragraph 48 of the report). 17 per cent of customers who answered this question would want to switch away from the merged entity (either to alternative packaging, or to other suppliers of new large steel drums) in the event of a price increase by the merged entity of 5 per cent or less. A further 22 per cent would seek alternatives to the merged entity. The results of this question are discussed further in paragraphs 48 to 50 of the customer survey report.
56. Greif argued that these results showed that a 5 per cent increase in prices by the merged entity would not be profitable because the total proportion of customers who said that they would switch would exceed the critical loss. Whether it would exceed the critical loss would depend on the proportion of orders that customers switched. The answers to the survey showed that most customers who could switch to other packaging could do so for only a proportion of their orders (see paragraph 54 above). In addition, we noted that the results of this question did not directly apply to market definition, as customers were asked about reactions to an increase in price by the

²Table 8 in the customer survey report gives the percentages, but as fewer than half the respondents answered this question, these proportions may be subject to a wide margin of error.

merged entity rather than to a general increase in the price of new steel drums. The ability of customers to switch to other UK suppliers of new steel drums is discussed in Appendix F.

57. These results suggested that currently some 15 per cent of total expenditure could be switched to alternatives and of these only some customers would switch as a result of a 5 per cent price increase, even though price was most often referred to as the main reason for potentially switching. However, when asked what were the realistic alternatives to each type of new large steel drum, around two-thirds of the respondents who used tight-head drums identified alternatives, and over half of those who used open-head drums identified alternatives. This might indicate that the longer-term potential for switching was perceived to be greater than was currently worthwhile or readily realizable.

Views of third parties on switching

58. We also received evidence from customers in hearings and submissions on past switching to alternative products. This confirmed that some customers had switched from new large steel drums to IBCs in recent years. We received little evidence from customers of switching to large plastic drums in the recent past.
59. Although it was apparent that few customers would be strictly limited to new large steel drums as a result of transport or other regulations,³ customers and manufacturers generally identified regulatory requirements and safety as key reasons for preferring steel. Steel drums, in particular tight-head steel drums, were said to perform better in safety tests; they were structurally stronger for stacking during storage and transport, particularly for exports to hot or cold countries; they could withstand pressure better during filling and transport; there was less risk of creasing leading to failure; steel reduced the risks associated with static electricity; and it performed better generally for flammable products and those with low flashpoints.
60. Customers and competitors also expressed views on whether the conversion to IBCs and plastic drums was continuing or had stabilized. Most evidence from customers, as well as evidence from a manufacturer and the IPA, suggested that the bulk of the conversion to plastic drums and IBCs had taken place, and that it would be more costly or more difficult for the remaining steel drum volumes to switch. However, manufacturers, and the IPA, suggested that developments in plastic technology might, in time, make plastic drums and IBCs more attractive as substitutes for steel drums for certain products, which might in turn lead to changes in switching behaviour by certain customers. How long it would take for such developments to have a significant overall impact was difficult to predict.
61. Mauser Group, a manufacturer based in Continental Europe, said that 80 per cent of customers who could have switched to plastic had done so and that the remaining 20 per cent were reluctant to switch because of the need to change filling equipment; and because of the inability to screen-print artwork on to plastic drums. It estimated that there would need to be a 15 per cent price differential before there would be further switching.
62. The entry of Mauser into UK production of IBCs (and plastic drums) might be taken to suggest that it anticipated increased demand for IBCs, but it told us that the primary

³In addition to the Carriage of Dangerous Goods Regulations and other transport legislation described in Appendix D, customers also referred to health and safety legislation, including the Dangerous Substances and Explosive Atmospheres Regulations.

goal of the new manufacturing facility was to replace current imports of IBCs with UK production.

63. Similarly, entry of Schütz, another manufacturer based in Continental Europe, into the production of large plastic drums in the UK might be taken to suggest that it anticipated increased demand. It told us that while it had planned to start producing plastic drums in the UK for some time, its move now was prompted by Mauser's plans to start production of IBCs and plastic drums in the UK.
64. A survey of Greif's customers carried out for the purpose of its internal 'Strategy Review: Core Business Assessment', dated August 2005, said that in chemicals, there was increased use of IBCs and bulk transport. The document concluded from the results of customer interviews that whilst there was a willingness to continue to switch to bulk packaging, migration was limited by the customers' own 'clients reluctance or inability to accept larger packages'.

Reconditioned steel drums

65. We heard that some customers were reluctant to use reconditioned drums. Some said that there was a risk that reconditioned drums would contaminate their product with the residues left after reconditioning, or might reduce the perceived quality of the product they supplied to customers. Similarly, customers with a strong brand image were disinclined to use anything other than a new drum; this preference was often driven by the end-users' perceptions.
66. A further concern, that led some customers to adopt a policy of not relying on reconditioned drums, even where the drum itself was technically compatible, was availability and continuity of supply. This concern was confirmed by suppliers. One supplier of reconditioned drums told us that uncertainty of supply was a barrier to switching to reconditioned steel drums. It depended on the supply of used steel drums that were suitable for reconditioning, which was declining as the use of new steel drums declined, and because recycling regulations tended to encourage scrapping rather than reuse. And both it and another supplier told us that because they had difficulty sourcing enough drums for reconditioning, they had to concentrate on delivering reliably to existing customers.

Large plastic drums

67. We were told by the parties and by plastic packaging manufacturers that recent developments in plastics technology would enable an increasing number of substances to be stored in plastic. Some customers confirmed their willingness to trial new technologies. However, other manufacturers and certain customers suggested that many customers were unwilling to take the risk of switching to new, unproven, types of plastic containers. Schütz told us that it had begun manufacturing three-layered drums in the UK in July this year, and that prices would be significantly below the steel equivalent. We are not aware of any other manufacturer producing this type of drum in the UK.
68. Large plastic and large steel drums can have slightly different dimensions and for some customers switching between large steel and large plastic drums might require investment in adjustments to filling, emptying or handling equipment, especially where it is highly automated.
69. Greif told us that because large steel and large plastic drums were very similar in size, any changes to customers' handling or filling equipment would be minor. Some

of the customers we interviewed agreed. Greif provided examples of customers who had switched without incurring significant costs. It also estimated the costs of purchasing a dedicated new filling line to be between £25,000 and £32,000. End-users might require a 'parrot-beak' attachment to their forklift trucks, which costs around 1,200 euros (approximately £800).

70. Other customers and a plastic drum manufacturer told us that if an investment had to be made in filling and handling equipment to accommodate differences in the dimensions of plastic drums, the switching costs would fall on both customers and end-users.
71. BP told us that costs of switching might be higher for those larger customers who had multiple, highly automated, integrated filling lines installed in a network of plants. It told us that it expected the cost of the new equipment required to fill and handle plastic drums to be in the region of £50,000 to £250,000 per filling location, depending on the extent to which existing equipment was integrated and automated. For BP, because switching would have to be rolled out consistently across its network of plants through Europe, total costs would be substantial and the work would take 12 to 18 months.
72. Shell told us that although it would take perhaps [X] to make the technical changes needed to its filling lines, it would take far longer to make a switch from steel drums to plastic drums commercially viable. The initial investment in plastic drums might be recoverable in theory because of their longer life span, but in practice the limitations of the collection and recycling arrangements for plastic drums made it difficult to recoup the initial costs. It believed that it would meet resistance from customers if it were to attempt to switch to plastic drums. The price of steel drums would have to increase by [X] before it would consider switching.

IBCs

73. Switching to IBCs would also involve costs of changing filling, handling and storage facilities. These might be more costly than the changes needed for a switch to plastic drums, because of the greater differences of shape and size of an IBC. However, as each IBC holds as much as five large steel drums (enabling larger users to reduce handling, storing and filling costs), there might also be greater cost savings in the longer term.
74. Greif told us that, because of the longer-term cost advantages and logistics benefits, IBCs would become a very attractive option for current users of new large steel drums if steel prices were to rise. Greif acknowledged that there were switching costs and that, because of the investment involved, a switch to IBCs would generally be permanent.
75. It may be that the full benefits of switching to IBCs cannot be realized either for customers or end-users until all deliveries are in IBCs. Even if many end-users would be happy to switch, the purchaser of steel drums would not want to have the cost of running multiple filling lines.
76. Whatever the costs and benefits of switching to IBCs for the purchasers of drums, a key determinant of their willingness to switch was their customers' preferences. Many customers told us that end-users were not willing to purchase products packed in IBCs.
77. BP told us that IBCs were often unsuitable for customers in developing regions, where manual handling was the norm. We also heard that many end-users, both

industrial and at the retail level, needed only small quantities of some high-value products, including, for example, some fragrances and flavourings and some chemicals, as well as retail products, for example customers buying lubricants for garages. These end-users were not prepared to store or handle anything more than a couple of drums at a time.