Working paper on supplier pricing to grocery retailers and wholesalers

Introduction

1. This paper presents further analysis of the prices charged to grocery retailers and wholesalers by their suppliers. The paper updates and expands on the preliminary results first reported in our Emerging Thinking, published in January 2007.

2. A number of parties, including the Association of Convenience Stores (ACS), the Federation of Wholesale Distributors (FWD) and the British Brands Group (BBG), have argued that larger grocery retailers are able to make purchases from suppliers at substantially lower prices than smaller grocery retailers and wholesalers. They submit that this cost advantage distorts competition, and in particular, contributes to a 'waterbed' effect, whereby smaller grocery retailers and wholesalers pay higher prices for supplies, reflecting a weaker bargaining position.

3. The ACS has submitted a formal theoretical model of the waterbed effect, and we provide an analysis of this model in our working paper on the Waterbed Effect (June 2007). In this working paper, we analyse empirically the extent to which supplier prices vary between individual grocery retailers and wholesalers. This analysis also contributes to our assessment of the model submitted by the ACS: this is because a key assumption underlying its model is that the size of a grocery retailer determines the extent of its buyer power and therefore its ability to extract non-cost-related discounts from suppliers.

4. In summary, our econometric analysis of the data provided to us by suppliers shows that there is a statistically significant relationship between price and volume. This indicates that we might expect, on average, a difference in the price paid to suppliers of around 10 per cent between very small and very large grocery retailers/wholesalers. However, not all small retailers or wholesalers pay more than large retailers.

A simple ranking of grocery retailers and wholesalers according to the average net price paid to suppliers over the past five years shows that a number of small retailers have been able to obtain a better price on average than larger retailers.

5. Prior to presenting our own analysis, the paper reviews the findings of previous CC investigations into this issue and discusses analyses submitted by [✂] and the ACS.

Findings in previous CC investigations

6. The CC, in investigating supplier pricing in 1999/2000,[1] examined:

- the average gross margin obtained by a sample of 19 suppliers in respect of their supplies to different grocery retailers, measured across all of their purchases (the 'aggregated gross margin analysis');
- the average net price (rather than margin) paid by different grocery retailers across the top five branded products supplied by a sample of 26 suppliers (the 'top five line prices analysis'); and
- how the average gross margin earned by each supplier across all of the goods it supplied to each grocery retailer varied with sales volumes (the 'individual margin analysis').

[1]CC, *Supermarkets: a report on the supply of groceries from multiple stores in the United Kingdom*, 2000.

TABLE 1 **Supplier margin and price analysis, ranking of retailers by the CC in 2000**

Aggregated gross margin analysis	*Top five line prices analysis*	*Price paid relative to Tesco**
Iceland	Tesco	100.0
Sainsbury's	Sainsbury's	101.6
Tesco	Asda	102.3
Somerfield	Somerfield	103.0
Netto	Safeway	103.1
Asda	Morrisons	104.6
Safeway	Iceland	105.3
Morrisons	Waitrose	109.4
Budgens	Booths	109.5
Booths	Netto	110.1
Waitrose	Budgens	111.1

Source: CC, 2000.

*This data shows a different ranking from the results based on prices relative to the unweighted average of the main parties for Waitrose, Booths, Netto and Budgens.

7. The ranking of different grocery retailers under both the aggregated gross margin analysis and the top five product price analysis is set out in Table 1. In the aggregated gross margin analysis, Iceland was identified as the grocery retailer from whom, on average, suppliers obtained the lowest margin, followed by Sainsbury's and Tesco (the difference between these two retailers was not found to be statistically significant). Asda was ranked sixth in this analysis. In the top five line prices analysis, Tesco was identified as the grocery retailer that, on average, paid the lowest prices to its suppliers, followed by Sainsbury's and Asda.

8. The individual gross margin analysis showed that there was a statistically significant relationship between gross margin and sales volumes for 7 of the 19 suppliers that sold entirely branded products (13, if outliers were removed). Of the ten suppliers that had material branded and own-label sales, a statistically significant relationship could be found for two (or three, if outliers and retailers that bought only own-label products were omitted). The relationship was not statistically significant for suppliers with substantial sales of own-label products.

9. As in the 2000 investigation, in the Safeway merger inquiry in 2003, the CC investigated price differences using gross margin data and the average net prices paid for suppliers' five best-selling SKUs. Data was collected for the most recent financial year. Around 50 supplier responses were obtained, resulting in information on about 240 product lines. A price index was constructed for each customer, which consisted of a ratio between the average prices that customer paid relative to the prices paid by Tesco. The overlap of product lines which were sold by both Tesco and each of the other main parties resulted in approximately 150 common lines.

10. The results showed that Tesco had lower purchase prices than the majority of its one-stop competitors. Whereas in the 2000 inquiry, Asda's purchase price was only slightly above that of Tesco, in the 2003 inquiry, Asda's indexed average purchase price had risen to significantly higher than that of Tesco. Iceland and Netto both recorded lower indexed average purchase prices than Tesco. It was suggested that these differences were the result of different purchasing policies between different retailers.

11. When examining the gross margins obtained by suppliers for different customers, the CC found that: increases in the size of customer were negatively related to margins—the lower prices extracted by the larger customers led to lower margins for the supplier (despite the smaller unit costs of supplying larger customers).

Supplier pricing analyses submitted by ACS and [✂]

12. Since the publication of Emerging Thinking in January 2007, significant pieces of analytical work have been submitted to us in relation to supplier pricing by both the ACS and [✂].

ACS analysis

13. The ACS submission provides a comparison across 317 branded SKUs of the price paid to the supplier by each of three unidentified grocery wholesalers[2] with the retail price charged by Asda, Sainsbury's and Tesco. This shows that in 25 cases (8 per cent) the average wholesale price is higher than the Tesco retail price for that SKU. There were 32 items (10 per cent) where the average wholesale price was higher than the retail price charged for that SKU, averaged across Asda, Sainsbury's and Tesco.

14. The ACS also seeks to show that a convenience store charging the same price as either Tesco or the average price charged by Asda, Sainsbury's and Tesco would earn lower than average margins in 50 to 60 per cent of cases. It submitted that the implication of this analysis was that in these cases, the large grocery retailers were buying at better prices than wholesalers supplying the independent trade.

15. We consider that there are a number of problems in using this analysis to draw conclusions about the relative prices or margins paid by grocery wholesalers and retailers to their suppliers. First, the retail and wholesale prices being compared by the ACS were not observed at the same point in time. The ACS told us that as a result 'the comparisons of individual SKUs are open to challenge, though we do not think the exercise as a whole is thereby undermined'. However, given the frequency of price movements in the sector, we cannot be sure that the comparisons being made by the ACS in its analysis are robust.

16. Second, the retail price charged by Asda, Sainsbury's and Tesco is not necessarily indicative of the price paid to the supplier for that product. Below-cost selling means that in a number of cases the retail price of a product will be less than the price paid

[2]The ACS describes two of the wholesalers as 'large' and the third wholesaler as 'medium-sized'.

to the supplier. On other products competition between grocery retailers may also have resulted in narrow margins. It is not clear how many products included in the ACS sample may be affected by this consideration.

17. Third, it is not clear what measure of price paid by wholesalers has been used to generate these results. Clearly, if these calculations do not include all payments that effect net prices, this would undermine the results.

18. Fourth, we question whether the wholesale benchmark used (ie simple average across wholesalers) is representative, particularly given the wide variations observed between the constituent members (on average, approximately 30 per cent).

19. Finally, the data used to generate average price charged by Asda, Sainsbury's and Tesco appears to be based on online shopping websites which may be unrepresentative of the prices charged by stores.

[✂] analysis

20. [✂] submitted a report co-authored by [✂]. The report is based on interviews with the sales directors of eight grocery suppliers of varying sizes, and seeks to provide insights into the means and basis on which trade terms are negotiated and structured, and why these terms might vary from one retailer to another. We have drawn on this work in undertaking our own analysis of supplier prices and refer to it further in setting out the methodology for our analysis below.

21. The report does not include any quantitative comparison of supplier pricing itself, but notes that the 'majority of suppliers stated that "almost always" the largest customers would obtain the best trade terms'. It goes on to state that the differences in the net net price across grocery retailers would usually exceed 10 per cent, and that a

substantial fraction of this difference would not show up in the headline or invoice price, but would be reflected in other payments by suppliers to grocery retailers.

22. A number of caveats were placed on this finding, however. For example, faster-growing retailers with smaller overall volumes may achieve better margins. Also, 'legacy' effects may mean that grocery retailers that previously had a favourable sales profile for suppliers were still able to maintain good deals with suppliers based on the difficulties suppliers faced in making substantial price adjustments. Further, suppliers may be willing to encourage sales through the wholesale and convenience retail channel through special deals, such as price-marked packages, thus facilitating price competition with the larger grocery retailers and so assisting sales volumes. Finally, some grocery wholesalers and smaller retailers seem to reduce their net net prices through buying proportionally more on promotion while some large grocery retailers may miss out on some of the promotional discounts due to their overall corporate 'every day low pricing' or hard discounting strategy.

The CC analysis

23. The remainder of this paper sets out the methodology used to analyse the pricing data the CC has collected from suppliers and discusses the preliminary results that have been obtained. The focus of our analysis is to establish the extent to which the prices that retailers and wholesalers pay for products vary, largely to inform two key questions: which grocery retailers pay the lowest prices, and whether there is a relationship between prices paid and volumes purchased.

Data collection

24. The methodological approach that we have used is to base our price comparisons on *SKU level* data rather than over an aggregation of products as per the aggregate gross margin analysis conducted in the 2000 inquiry. We recognize that analysis at

the SKU level *might* provide an incomplete picture where retailers accept a 'poor' price on one SKU to offset a 'good' price on another that is not in the sample (this can be a problem where one type of retailer (eg larger retailers) focuses on a different pack size from other retailers (eg smaller retailers or wholesalers)). Nevertheless, we consider that it is better to address this issue by analysing a sufficiently large sample of SKUs rather than analyse prices and/or margins at the aggregate business level. This is principally because under the latter approach, underlying differences in product mix could bias the results that are obtained.

25. We also recognize that focusing on an SKU level comparison could, in principle, result in the omission of discounts/payments agreed at the brand and/or account level. We have endeavoured to address this problem by requiring that, where such payments exist, an allocation is made to each SKU (typically by volume). We also note that our analysis of the buying strategies of a number of grocery retailers indicates that relatively few grocery retailers negotiate at the brand level with their suppliers.

26. The results we present below are based on data collected from 29 suppliers.[3] From each of these suppliers, we have collected volume, pricing and (where possible) cost data for a range of customers for up to five years. In many cases, we have asked for this information for a supplier's six top-selling SKUs. However, for some suppliers, we have requested this information for a broader range of their brands.[4] The suppliers included in the sample vary in terms of both sector and size. [✂]

27. The following table provides summary information on the coverage of our sample in terms of supplier and SKU, namely: the identity of the suppliers that have responded,

[3]We are still waiting for some additional responses. Once all responses have been received we expect that our coverage will exceed 35 suppliers.
[4]For example, [✂] has provided us with data for [✂] that vary in terms of their prominence.

the number of SKUs they have provided us with data on (and from which sector these are drawn), and the revenues that these SKUs account for. The basis of the revenue figure is sales invoiced to their customers in the last full fiscal year for which we have data. However, some suppliers have not provided us with this information, in which case we have used net revenues earned (which will therefore understate the true coverage). In total, the SKUs covered in our sample represent approximately £2.5 billion of *annual sales at wholesale prices*. This contrasts with an overall size of the UK grocery market equal to approximately £96 billion *based on annual retail sales* (rather than wholesale). As a result, we estimate that the current sample might cover approximately 3 to 4 per cent of total grocery retail sales in the UK.

TABLE 2 **Details of sample**

Supplier name	*Number of SKUs*	*Products*	*Revenues for sample of SKUs, in pounds (most recent full year)*
Total	**177**	**-**	**2,493,790,462**

Source: CC analysis.

28. From each supplier, we requested a significant amount of detailed SKU-level transaction data. For a given sample of customers (representing a range in terms of

size and type), we requested:[5] the volumes sold to each customer, the net prices paid, data on *each of the components* that made up net price and all cost data that was recorded at the customer level. All of this information was supplied on a monthly basis where possible.

29. As well as providing us with a useful insight into the composition of net prices, the data on the components of net price has also enabled us to generate two useful measures of the price paid by retailers/wholesalers: the *net price* (ie price net of all discounts, whether fixed or variable) and the *price net of variable discounts* which, as noted in the working paper on the Waterbed Effect (June 2007), is likely to be most relevant for assessing shorter-term aspects of the 'waterbed' effect model.[6]

30. Drawing on the [✂] study and using the itemized data we collected we were able to cross-check with suppliers that all the discounts/payments pertinent to our analysis were included in the data submitted to us, for example:

- all types of variable promotional support such as BOGOF, multibuys, price marked packs, percentage off packs;
- all types of fixed promotional support, eg gate fees, POS materials, payment for gondola ends;
- all rebates, whether lump sum or growth/volume/value/per unit related, and regardless of payment frequency; and
- any other payments, eg for scanner data, distribution targets etc.

[5]For example, large national retailers, convenience chains and grocery wholesalers.
[6]According to the Inderst model, in order for non-cost-related discounts to give rise to negative welfare effects, those discounts need to be passed through to consumers (so that the larger retailers can acquire greater market share which reinforces their bargaining strength and improves their ability to extract discounts further). Economic theory suggests that a retailer will only have an incentive to pass through discounts that directly affect the unit price. Therefore, price reductions to fund promotions, or per unit retroactive rebates that effectively lower the unit price that a retailer pays for a good, should be what matters for the waterbed effect. Lump sum payments (eg listing fees, payment for gondola ends) should arguably be excluded since they should not affect unit price. These lump sum transfers nevertheless affect the long-term viability of suppliers and retailers and hence are relevant for evaluating how concentration in the market is going to evolve.

31. The extent to which suppliers were able to itemize net price varied considerably depending upon the sophistication of their accounting systems. For the same reason, the types of cost data that were submitted varied by supplier. It was common for suppliers to be unable to provide marketing and advertising spend, R&D and cost of sales at a customer level by SKU. This was typically because this data was not recorded by customer, or where it was, it was not recorded by brand and hence allocation to the SKU level would be unlikely to be meaningful. Nor could many suppliers provide us with meaningful data on distribution costs by customer.

32. The implication of these data limitations is that, in conducting a simple comparison between the prices paid by different customers, we cannot always establish the extent to which any differences we observe are cost-related due to, for example, higher production costs (eg shelf-ready packaging) or higher distribution costs. We discuss ways to mitigate these problems in our analysis below.

33. In all cases, other than one, suppliers submitted data to us without our needing to utilize our statutory powers to require the provision of information.

Data analysis and results

34. Where the data enables it, we have calculated two measures of price: price net of variable discounts, and net price (net of both variable and fixed discounts). We have generated these measures for each customer, for every SKU that they purchase, in every year. In order to enable us to draw some comparisons across SKUs and time, we have generated relative price and relative volume indexes. For each SKU purchased, we compute the annual relative price paid by each customer. This price index is relative to the annual average price of each SKU. For example, a grocery retailer's annual relative price for the purchase of SKU A will be the ratio of the

annual price it actually pays over the annual average annual price of that SKU A. The same process applied to the computation of the relative volume index.

35. We have also calculated weighted average prices paid (and associated relative measures) by customer for a given SKU over the *whole period* for which we have data, to enable us to aggregate the data over time.

36. We present two pieces of analysis based on these measures. The first uses the weighted average net price and total volumes purchased over the full period for which we have data, in order to generate for each retailer/wholesaler: *(a)* the relative net price, *(b)* relative price net of variable discounts, and *(c)* relative volume *averaged* over all the SKUs that the retailer/wholesaler purchased during the period. Table 3 presents the results for a sample of our retailers.[7] These figures are averaged over *all SKUs* and *all periods*.[8] The results show that on average [✂] obtains one of the lowest prices (on both measures) out of the four major grocery retailers [✂].[✂], on the other hand, pay close to the average, while [✂] is paying slightly less than the average. However, it is also noteworthy that retailers who are purchasing smaller volumes (eg [✂]) obtain lower (on average) prices than [✂] and [✂].

[7]We have excluded those customers who purchased less than 10 SKUs from our sample group over the period.
[8]The prices used to construct this table represent weighted average prices over the period for which we have data. The average across SKUs are simple averages (non-weighted).

TABLE 3 **Comparison of relative prices and volumes by retailer/wholesaler**

Customer name	*Customer type*	*No of SKUs*	*No of SKUs*	*Average relative net price*	*Average relative price net of variable discounts*	*Average relative volume*
[✂]	Small retailer/wholesaler	10–49	[✂]	87	71	[✂]
	Large retailer	100+		92	91	
	Small retailer/wholesaler	50–99		94	90	
	Large retailer	100+		96	96	
	Small retailer/wholesaler	10–49		96	-	
	Small retailer/wholesaler	50–99		97	98	
	Large retailer	100+		98	100	
	Small retailer/wholesaler	10–49		99	99	
	Large retailer	100+		100	100	
	Small retailer/wholesaler	50–99		100	109	
	Large retailer	100+		100	96	
	Small retailer/wholesaler	10–49		100	99	
	Large retailer	100+		101	98	
	Small retailer/wholesaler	50–99		101	109	
	Small retailer/wholesaler	100+		101	104	
	Small retailer/wholesaler	100+		101	105	
	Small retailer/wholesaler	10–49		102	105	
	Large retailer	10–49		104	102	
	Large retailer	100+		104	105	
	Small retailer/wholesaler	10–49		104	103	
	Small retailer/wholesaler	10–49		106	103	
	Small retailer/wholesaler	50–99		106	118	
	Small retailer/wholesaler	50–99		107	113	
	Small retailer/wholesaler	10–49		108	110	
	Small retailer/wholesaler	10–49		108	108	
	Small retailer/wholesaler	10–49		110	81	

Source: CC analysis.

Note: The grocery retailers and wholesalers included in this table largely follow the account names that suppliers have provided us (ie we have not typically aggregated prices based on buying groups etc). [✂]

37. When we conduct the same comparison on an annual basis we find that, broadly speaking, these conclusions hold. With the exception of 2001, in every period [✂] has obtained the lowest net price out of the four major grocery retailers: [✂]. The position with respect to invoice price net of variable discounts is slightly more complex. The data indicates that [✂] position improved markedly from [✂] to [✂] between 2001 and 2002: since then this figure has fluctuated between [✂] and [✂] in 2004.

38. [✂] Since 2003, [✂] has typically been ranked second behind [✂] in terms of the four major grocery retailers on both measures of price. [✂]

39. In nearly all years since 2002, [✂] has the highest average relative price out of all the four major grocery retailers (on both measures) ranging between 100 and 103

(net price) and 96 and 106 (invoice price net of variable discounts). Since 2002 [✂] tends to, on average, pay a lower price: its relative price position varies between 98 and 99 (net price) and 95 and 103 (invoice price net of variable discounts).

40. In each year, we find that there are examples of smaller customers that are able to extract prices that on average are as low as, if not lower than, the four major grocery retailers. In particular, in most years, [✂] and [✂] tend to obtain prices that are lower than average and better than some of the four major grocery retailers. Discussions with suppliers about why prices vary indicate that there may be a number of reasons for why we observe this. Pricing seems to be driven to some extent by the history of the account, the future growth potential of the account, the promotional/retail strategy of the customer and cost factors, and not just relative size.

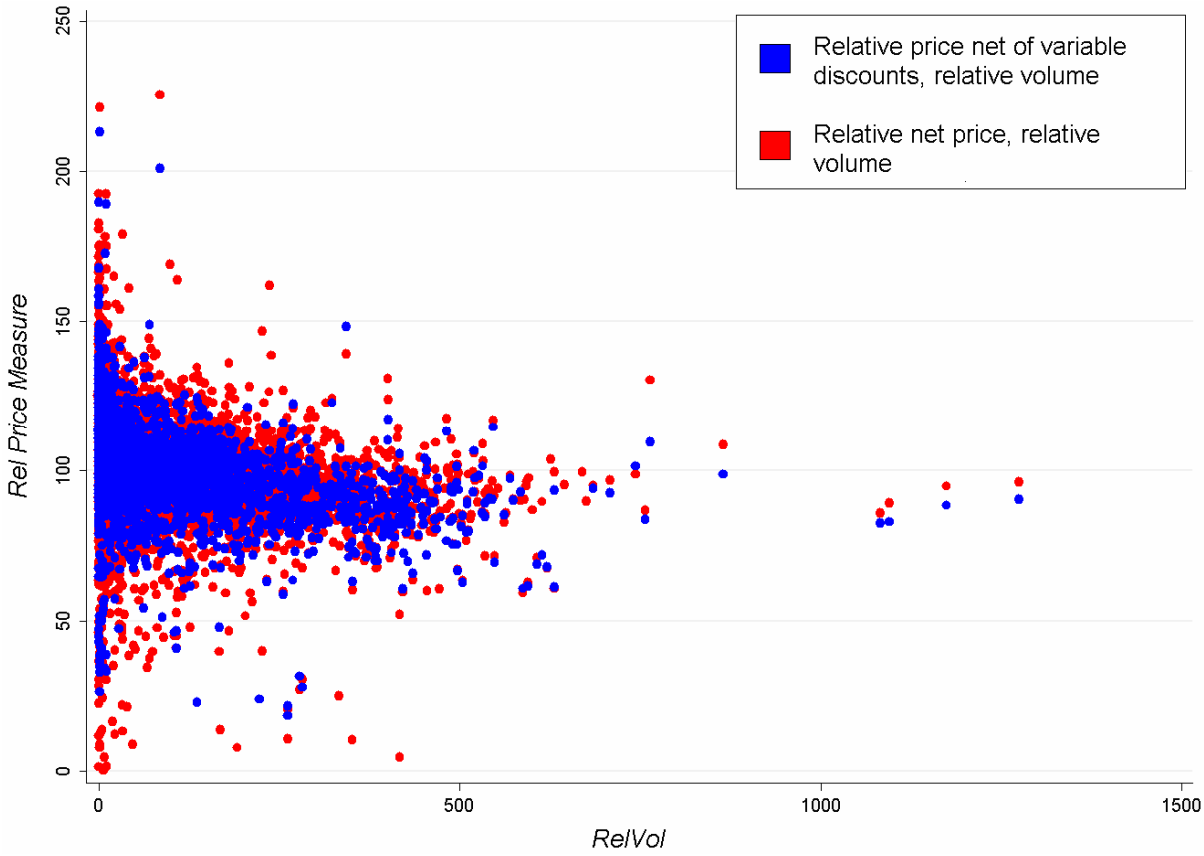
41. We note that results in the earlier years (namely 2001, and to some extent 2002 and 2003) are likely to be less robust than those in the latter years since they are underpinned by fewer observations.[9]

42. We have also used the annual data to conduct an econometric analysis to isolate the impact of volume on price. The following scatter chart plots the relative price (both measures) paid vs relative volume purchased. Each observation represents the relative price paid by a retailer/wholesaler for a given SKU for a given year vs the relative volume purchased in that year. In essence, our econometric analysis seeks to plot a line of best fit through these points whilst controlling for other factors that might affect price. As the chart below indicates, there is notable variation in the relative prices obtained by relatively small purchasers.

[9]This is because not all suppliers have been able to provide us with data covering the past five years.

FIGURE 1

Scatterplot of relative price vs relative volume, by year



Source: CC analysis.

43. A number of factors are likely to affect the price paid for a given product. These include the manufacturing costs of the product, distribution costs and the bargaining power of the buyer. Our aim is to identify the effect of volume on prices while controlling for the impact of these confounding factors. Due to data limitations, we cannot include all these factors in the model we are estimating. However, we can take advantage of the fact that we have a panel data set (ie for each supplier, we have prices by customer and over several years). Using a fixed-effect or a random-effect estimator, we can control for any time-invariant factors that also affect prices paid by customers. In addition, we separately control for customer identity. We do this in two ways: in one case, we isolate the price effect of being one of the four major grocery retailers, and in the other, we calculate an individual price effect for

each of the four major grocery retailers (with and without Morrisons, which was involved in M&A activity over the period).

44. We first present the results of the relationship between volume and net price (ie net of both fixed and variable discounts). Without controlling separately for customer identity, the coefficient on volume is –0.034 using both fixed effects and random effects (which the data indicates is a reasonable approach to use) and the intercept is approximately 103.5. In both cases, these results are statistically significant at the 1 per cent level. This implies that a ten-point increase in relative volume (ie volume relative to the mean) would result in a 0.34 point decrease in relative net price. Put another way, our results predict that a customer that purchases 10 per cent of the average volume purchased (ie a very small customer) would pay approximately 3 per cent above the average net price paid. On the other hand, a customer that purchased three times (ie 300 per cent) of the average volume purchased (ie a very large customer) would pay approximately 7 per cent less than the average net price. Overall, the difference between the volume purchased by the very small and very large customer would result in a net price differential of approximately 11 per cent.

45. Controlling for the identity of the customer does not materially affect the coefficient or the intercept. [✂][10]

46. When we look at the relationship between volume and invoice price net of variable discounts, we find that without controlling separately for customer identity the co-efficient on volume is –0.041 using random effects and –0.040 using fixed effects and the intercept is approximately 104 in both cases. These results are statistically significant at the 1 per cent level. In other words, a ten-point increase in relative

[10]We also run the model controlling for the customer-product relationship over time (rather than the customer-supplier). This yields a coefficient of around –0.037 and an intercept of around 103.5–104 (random effects). The equivalent figures for fixed effects are –0.036 and 103.7.

volume would result in a 0.4 point decrease in relative invoice price net of variable discounts. These results predict that a customer that purchases 10 per cent of the average volume purchased (ie a very small customer) would pay approximately 4 per cent above the average price (net of variable discounts) paid. On the other hand, a customer that purchased three times (ie 300 per cent) of the average volume purchased (ie a very large customer) would pay approximately 8 per cent less than the average price net of variable discounts. Overall, the difference between the volume purchased by the very small and very large customer would result in a price differential of approximately 13 per cent.

47. Controlling for the identity of the customer does not materially affect the coefficient or intercept. [✂][11]

48. In summary, the results indicate that whilst volumes purchased do affect price, the effect of a *marginal* increase in volume is relatively small. Nevertheless, the effect is large enough to give rise to predicted net price differentials between a very large and very small customer of approximately 11 per cent. The equivalent differential for prices net of variable discounts is 13 per cent.

[11]When we ran the model controlling for the customer-product relationship over time using fixed effects, this yields a coefficient of –0.033 and an intercept of 103.5. We do not report the results of the random effects since the Wu-Hausman test statistics are variable.