



## **COMPETITION POLICY TOWARDS RETAILERS: SIZE, SELLER MARKET POWER AND BUYER POWER**

**by**

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### **Abstract**

This paper analyses the way in which European competition policy is carried out in the retail sector. The basic principles adopted by the European Commission are derived from recent merger decisions, and their consistency with the results of economic theory is analysed. A formal model is introduced to analyse supplier-retailer negotiations over the wholesale price in which retailers serve different distribution markets. The model shows that the current way in which the markets are defined can work in a perverse way, and points to changes in this practice.

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## 1. Introduction

The retail sector of most western economies has experienced, during the past ten or twenty years, a substantial transformation. Changes have occurred in various areas of the business and in almost all the cases they have involved an increase in concentration (as shown for the European food retail sector in table 1) and the emergence of new forms of contractual agreements between retailers and their suppliers. For example retail chains have introduced, in their contracts with producers, the payment of slotting allowances, whose function is the subject of debate<sup>1</sup>.

Country	Current level	Change in recent years	
		% points	period
Austria	79	+14	1990-96
Belgium/Lux.	57	+1	1988-92
Denmark	78		
Finland	96	+3	1990-96
France	67.2	+7	1988-92
Germany	75.2	+10	1988-92
Greece	59		
Ireland	50		
Italy	30		
Netherlands	79	0	1988-92
Portugal	52		
Spain	38	+11	1988-92
Sweden	87	+24	1985-96
UK	67	+7	1988-92

Source: Dobson Consulting (1999) p. 45, various sources.

These changes in the competitive environment of the retail business have prompted many antitrust authorities to ask for new and more specific theoretical analyses of various aspects of retail competition with the aim of informing their activity on mergers and agreements between firms. In Europe a series of studies have been commissioned by the

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<sup>1</sup> See the opposite views of Shaffer (1991) and Sullivan (1997) and the workshop conducted by the Federal Trade Commission (FTC, 2000).

OFT in the UK, by the European Commission and the OECD has also undertaken research on retailers' buyer power<sup>2</sup>. At the same time academic research has also addressed issues related to mergers and inter firm contracts in contexts where retailers are not perfectly competitive<sup>3</sup>.

Very recently, this body of new theoretical contributions has been used by the European Commission to assess the impact of mergers between retailers with high market shares. This paper looks at some aspects of the way in which economic theory has so far informed antitrust activity in the retail sector. In the next part I derive, from actual merger cases, two principles upon which the Directorate General Competition (DGComp) has based its conclusions. One has to do with the effects of buyer power held by retailers and the other with the determinants of buyer power and their implications for the identification of the relevant market. Part three analyses the consistency of these principles with economic theory. Part four focuses on market definition with a formal model aimed at showing how the Commission's practice can lead to perverse effects. Part five concludes by deriving some policy recommendations.

## **2. Competition Policy towards retailers**

Virtually every notified concentration in the food retail sector is now analysed by the European Commission with respect to its potential effects on two sets of markets at two separate levels of the supply chain. The "distribution level" is the one that sees retailers supplying a basket of goods to final consumers, while at the "procurement level"<sup>4</sup> retailers buy the goods from manufacturers. Fig. 1 below shows the flow of goods at the two levels of the supply chain. The boxes in the example can represent individual firms or more or less homogeneous "groups" of firms.

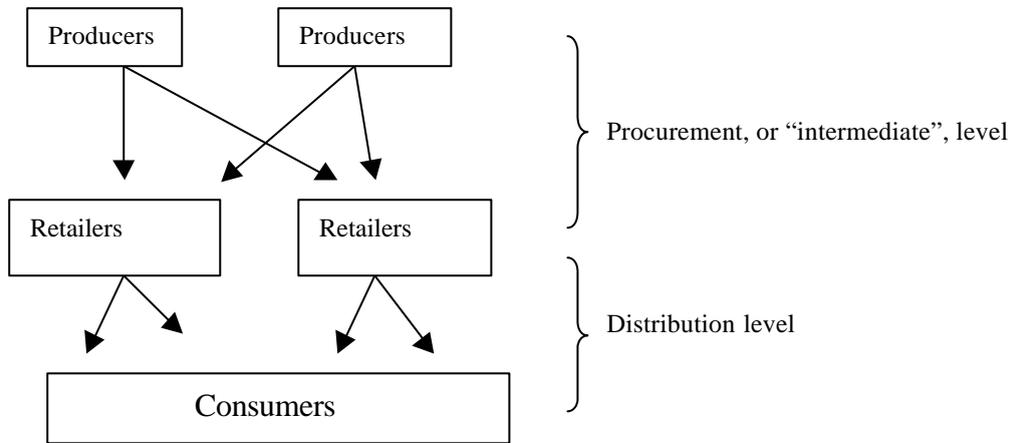
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<sup>2</sup> See London Economics (1997), Dobson et al. (1998), Dobson Consulting (1999) and OECD (1999).

<sup>3</sup> For example Mathewson and Winter (1997), von Ungern-Sternberg (1996) and Dobson and Waterson (1997).

<sup>4</sup> In the new Guidelines on Vertical Agreements, the term used is "purchase markets".

Figure 1: Flow of goods at the procurement and distribution levels.



Two important Decisions taken by DGComp have set out the basic principles upon which mergers in the retail sector are now assessed. These are the *Kesko/Tuko*<sup>5</sup> and the *Rewe/Meinl*<sup>6</sup> Decisions, which relate to the merger of two leading food retail chains in Finland and Austria respectively. In the former case the merger was prohibited and in the latter it was allowed subject to undertakings<sup>7</sup>.

The implications of the buyer power enjoyed by retailers vis-à-vis their suppliers have a central role in the Commission’s assessment of mergers in the retail sector. The following passage states clearly what the Commission’s view on these matters is:

*«In the retail trade there is a close interdependence between the distribution market and the procurement market. Retailers’ shares of the distribution market determine their procurement volume: the bigger the retailer’s share of the distribution market, the larger the procurement volume. And the larger the procurement volume, the more favourable as a rule are the buying conditions which the trader obtains from its suppliers. Favourable buying conditions can in turn be used in various ways to improve one’s position in the distribution market [...]. The improved*

<sup>5</sup> Decision 97/277/EC – *Kesko/Tuko* (OJ L 110/53, 26/4/1997)

<sup>6</sup> Decision 1999/674/EC – *Rewe/Meinl* (OJ L 274/1, 23/10/1999).

<sup>7</sup> The positions taken by DGComp in these Decisions are important for various reasons. First of all the principles established there have since informed subsequent antitrust proceedings in the sector. Furthermore the new guidelines on vertical agreements refer to the *Rewe/Meinl* case as an example of how procurement markets are to be defined.

*position in the distribution market is itself reflected in a further improvement in buying conditions and so on.*

*The spiral described above leads to ever-higher concentration both in distribution markets and in procurement markets. In the short term consumers may benefit from the process [...]. But this will last until such time as a structure [...] is arrived at in the distribution market which leads to a clear reduction in competitive intensity. At this stage, any consideration for the final consumer goes by the board, as he is left with few alternatives»<sup>8</sup>.*

In this passage the Commission makes clear its position on two issues related to buyer power. The first refers to what buyer power implies in terms of the competitive environment, and the second refers to what is supposed to be determining it.

In this passage procurement volume is taken to be a decisive factor in determining the relative bargaining strength in supplier-retailer negotiations. In other words a retailer that buys more than its competitors from a certain supplier will get, from that supplier, a better deal. As will be made clear below, this assumption has a crucial role in the identification of the relevant market.

As far as the implications of buyer power for competition are concerned, it should be noted, in addition to the passage quoted above, that in a previous paragraph the Commission does not rule out the possibility that buyer power could be beneficial, or *countervailing* in Galbraith's terms<sup>9</sup>. On the other hand, though, the Commission highlights the relevance of strategic links between retailers' buying and selling power that are believed to ultimately have a detrimental effect on competition.

Incidentally, these two positions are not easily reconciled. In fact, if one believes strongly in the idea that buyer power confers a strong advantage to the "bigger" retailers and that those retailers would use that advantage to increase their market share, he or she will also

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<sup>8</sup> *Rewe/Meinl* Decision par. (72) and (73). This idea was suggested as a theoretical possibility in Dobson, Waterson and Chu (1998).

<sup>9</sup> *Rewe/Meinl* Decision Par. (71). The term introduced by Galbraith (1952) refers to market power that arises to counterbalance already existing monopolistic or powerful oligopolistic market structures, ultimately acting in the interest of consumers.

consider that any market structure where retailers have different market shares, regardless of the present degree of competition between them, will eventually converge to a more concentrated and less competitive one. In other words the “spiral” described by the Commission taken to an extreme form implies that any equilibrium where buyer power has a *countervailing* role is an unstable one if the retailers have different market shares.

After having set out the basic theoretical viewpoint on buyer power the subsequent step is to conduct the assessment of the specific case at hand. The starting point is the identification of the relevant market, which has to be defined in both its product and geographical dimension. In these cases the market definition exercise is conducted, for the product dimension, in the following way<sup>10</sup>.

At the **distribution** level of the supply chain the Commission finds that supermarkets and hypermarkets constitute a separate relevant market and do not compete with other forms of food distribution such as the specialised trade (i.e. butchers, bakers, etc.) or petrol stations. At the **intermediate** level, on the other hand, all these various forms of food distribution constitute different “sales channels” open to food manufacturers. In order to define the relevant market(s) at the intermediate level the Commission first identifies “more or less homogeneous” sets of products in order to group together manufacturers into several product categories. Secondly, on the demand side, the above mentioned sales channels are lumped together in a same set of “relevant buyers” unless there are strong differences in product specification for the various channels.

For the geographic dimension, the markets are defined as national both at the procurement and the distribution levels, although sub-national areas of strength are identified for the various players. The rationale for this position is that when local markets overlap they can be treated as a single market and that many dimensions of competition, for example advertising, are national.

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<sup>10</sup> *Rewe/Meinl* Decision Parr. (75) to (81).

Given the Commission's view on what determines buyer power, under this market definition a buyer's share of purchases will measure its buyer power.

On the basis of the above it is possible to identify two basic principles upon which the Commission has based its conclusions against the merging parties, and that have so far informed antitrust policy towards retailers. These are:

1. The idea of a strategic interdependence between buying and selling power potentially leading to higher concentration in all relevant markets, and
2. The idea that buyer power is determined by the size of the buyer relative to the size of the seller, in terms of total procurement and sales volume respectively.

### **3. Economic Theory**

The first of these two principles is a specific hypothesis on the evolution of concentration in the retail sector; the choice of a specific "pass-on dynamic" in Scherer and Ross's terms. There does not seem to be enough theoretical or empirical support for this idea to justify its use as a robust general principle. Scherer and Ross (1990) cite a few alternatives that seem equally if not more plausible. To start with, a firm that enjoyed higher bargaining power than her rivals could just as well opt for a high-profit strategy rather than one of aggressive pricing and market share expansion. This would particularly be the case if there are regulatory costs associated with building new sites or simply there is a scarcity of suitable sites, as would seem to be the case for many European countries<sup>11</sup>. Secondly, if the retail sector is characterised by few aggressive firms, it is conceivable that the firm's competitors would be able to detect any significant cost advantage it enjoyed. As a consequence they could be able to negotiate similar discounts from the producer so that what begins as price discrimination can end up generating, in

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<sup>11</sup> Although expansion via acquisition wouldn't be impeded by these factors.

Scherer and Ross's words, "[...] a chain reaction that ultimately affects the whole structure of prices [...]"<sup>12</sup> and eventually benefits consumers.

Having said this, the issue of buyer power cannot be treated by antitrust authorities as one of secondary importance. Buyer power can have negative effects, if exercised against competitive manufacturing industries, and although its strategic role in competition between retailers is not clear, it could potentially be an important one.

The second principle relates to what confers buyer power. The idea that a firm's procurement volume relative to the seller total output is positively correlated with his or her bargaining strength has undoubtedly, at first glance, an intuitive appeal. It is nonetheless a misleading idea.

To begin with, theoretical and empirical studies have shown that there are circumstances in which the size of the buyer relative to the total output of the selling industry actually reduces his or her bargaining strength, and small buyers are able to extract bigger discounts from manufacturers. As an example Scherer and Ross (1990) quote the case of the US cement industry where small and secret transactions were undetected by members of the cartel who could only retaliate if a member were to cheat on bigger and not secret orders.

In this case a key factor is clearly the fact that some of the transactions are secret while others are not. On the other hand, considering all transactions to be secret, it seems possible that if a manufacturing industry is colluding in a context of uncertain demand<sup>13</sup>, smaller buyers could be more able to negotiate discounts that wouldn't trigger a price war and therefore be at an advantage with respect to their bigger competitors.

On a different note, the idea of sheer procurement volume being a strong determinant of buyer power is certainly in contrast with much of the history of the retail sector both in

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<sup>12</sup> Scherer and Ross (1990) ch. 14 p.532.

<sup>13</sup> As, for example, in Green and Porter (1984).

Europe and in the US in the last 40 years. In both areas smaller but efficient firms have been able to successfully compete against much bigger rivals and eventually become leaders in the market, thereby showing the absence of a decisive advantage due to procurement volume. The US experience in this sense is striking. There, the now market leader Wal-Mart has been able to sustain severe price wars on branded goods such as Crest toothpaste from its competitor K-Mart when the sales of these two companies were \$80 million a year for Wal-Mart and \$3 billion for K-Mart<sup>14</sup>. Hence, assuming that the sales of toothpaste were roughly the same proportion of total sales for both companies, this is a case in which size didn't seem to give K-Mart much of an advantage over a company some 375 times smaller in terms of procurement volume<sup>15</sup>.

In view of these issues, I argue that a more meaningful indicator of buyer power is given by the market power that each buyer enjoys when it acts as a seller in its own distribution market<sup>16</sup>.

The use of this latter concept does have important implications with respect to merger policy in the retail sector, in particular with respect to market definition. The intuitive reason for why this is the case is that at the intermediate level transactions occur between firms and prices are normally not observed. This means that the relevant market cannot be identified by means of an empirical SSNIP test<sup>17</sup>, and consequently, the conclusions reached will ultimately rest on what is supposed to be determining the relative bargaining power. The formalisation in part 5 will make clear the ways in which the market definition exercise should be addressed depending on what generates retailers' buyer power.

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<sup>14</sup> Sam Walton and Thomas Jefferson tell the anecdote in Sam Walton (1992) ch.13.

<sup>15</sup> This is obviously less meaningful the more one believes in the efficacy of the Robinson-Patman Act in preventing price discrimination.

<sup>16</sup> It should be noted that a similar view is more common in some management literature, see Corstjens and Corstjens (1995) and from there has informed the activity on these topics conducted by the OECD, see Hewitt (2000).

<sup>17</sup> See NERA (1992) for a discussion of this test.

The theoretical alternatives quoted above were all cases in which a small firm could be at an advantage when dealing with an upstream collusive oligopolistic manufacturing industry. Recent theoretical contributions by Dobson and Waterson (1997) and von Ungern-Sternberg (1996), analyse a vertical structure in which retailers bargain with a monopolist manufacturer. The focus of these models is on Galbraith's early idea of *Countervailing Power*. They aim to formally assess under what conditions higher concentration in the retail sector can translate into lower prices for final consumers.

The results, in both cases, are that in order for concentration at the retail level to be beneficial it has to be the case that competition in the final stage is particularly intense. If this condition holds, retailers are forced by rivalry to pass on to final consumers any discounts they may be able to extract from the producer by virtue of their increased bargaining power<sup>18</sup>. At the same time, the intensity of competition at the distribution level reduces the retailers' bargaining strength. In these models, though, it is also the case that the fewer and bigger the retailers are, the stronger their negotiating position is. Indeed von Ungern-Sternberg states that the outcome of the bargaining process in his model "[...] captures the conventional idea that large retailers have more bargaining power"<sup>19</sup>.

The ambiguity of these results with respect to merger policy arises from the absence of differentiation at the distribution level. This feature of the models implies that a retailer's share of purchases of the supplier's output coincides with the same retailer's distribution market share.

In the part that follows I will introduce a formal example of a vertical structure in which a retailer's bargaining strength vis-à-vis a monopolist manufacturer is given by its selling power in its own distribution market. This model is not to be seen as an alternative, but rather as a complement, to the papers of Dobson and Waterson and von Ungern-

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<sup>18</sup> These contributions provide a rigorous theoretical foundation to the traditional view, originated in Bowley (1928) about the implications for consumer prices of vertical structures in which bilateral market power is present at some stage in the chain. See also Scherer and Ross (1990).

<sup>19</sup> von Ungern-Sternberg (1996), p.515.

Sternberg. While these studies focus on the issue of countervailing power, my model is constructed with the aim of analysing the market definition practice established by the European Commission.

At an analytical level there are two main differences with respect to these related studies. The first is that retailers serve different distribution markets, and the second is that the outcome of the negotiating process is not described by a Nash bargaining solution. This latter feature of the model allows to compare the bargaining strength of firms that are different only in terms of the competitive conditions of the distribution markets in which they operate, and are identical in their technology. This is not the case in von Ungern-Sternberg's model where in order to be able to operate with a Nash bargaining solution, firms are assumed to have increasing marginal costs under the Bertrand regime, as opposed to the Cournot case where retailers operate with constant marginal cost.

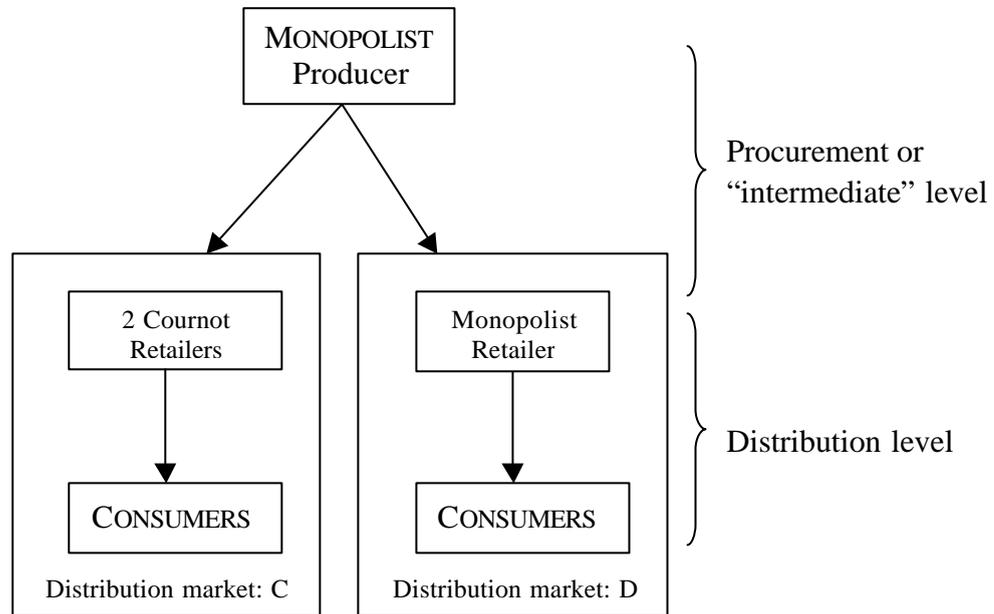
#### **4. A formal example**

Consider the supply chain for a good, characterised in the following way:

- Only one firm, a monopolist, produces the good.
- The good is retailed in two completely separate distribution markets. Call these markets: C and D.
- Two retailers operate in market C, and only one in market D.

What this means in the terms used above is better seen in figure 2.

Figure 2: flow of the good in the present example



#### 4.1.1. A Stage-game

Let's assume that trade along the supply chain occurs in the following stages.

- (1) In the first stage the manufacturer declares a wholesale price at which it is willing to supply.
- (2) In the second stage all retailers can either accept or reject the manufacturer's offer. A retailer that accepted the manufacturer's offer at this stage would gain a total first mover advantage over any competitor who rejected the offer, so that the latter will not be able to supply the distribution market at all.
- (3) In stage three those retailers who have refused in stage two can make a final take-it-or-leave-it offer to the manufacturer in terms of a wholesale price at which they are willing to buy.
- (4) In stage four the manufacturer can either accept or reject the retailers' offer.

(5) In the fifth and final stage the retailers compete in their respective distribution markets.

The particular stage game chosen here has no pretence of describing the actual way in which bargaining takes place between manufacturers and retailers. It allows a tractable analysis of the issues under consideration by describing a context in which retailers with the same technology have a different degree of buyer power only because of different downstream competitive conditions<sup>20</sup>.

The equilibrium of this game will be found by backward induction. The first step will therefore be an analysis of the last stage of the game, that is of the way in which retailers compete in their respective distribution markets. Given the assumption made above there can only be two retail structures: duopoly and monopoly.

#### ***4.1.2. Retail competition: Cournot duopoly (Distribution Market C).***

The two firms in market C compete in quantity given the market demand for the good<sup>21</sup>. This case only arises when both retailers make the same choice in stage (2) to either accept or reject the manufacturer's offer.

In order to simplify the example the following linear market demand for the good will be assumed:

$$P_r(Q) = a - b \cdot Q \tag{1}$$

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<sup>20</sup> To fix ideas one could think of a world in which retailers already selling a certain number of products bargained on the wholesale price with the manufacturer of a new product, and consumers had a strong preference for variety and high switching costs. These factors, which are considered as crucial in determining for example whether manufacturers pay or not slotting allowances (see FTC, 2000), are somehow made extreme in this example.

<sup>21</sup> The choice of Cournot competition between retailers is sometimes justified by reference to the results of Kreps and Scheinkman (1983), as retailers make investments in capacity (number and size of outlets) and then compete in price. In any case, assuming Bertrand competition here does not change the qualitative results.

Where  $P_r$  indicates the retail price at which consumers will be willing to buy an amount  $Q$  of the good. As in a standard symmetric duopoly the firms will aim to choose their individual output  $q_i$  so to maximise their profits that are given by the following expressions:

$$\begin{aligned}\Pi_1(q_1) &= P_r(Q) \cdot q_1 - p_w \cdot q_1 \\ \Pi_2(q_2) &= P_r(Q) \cdot q_2 - p_w \cdot q_2\end{aligned}\tag{2}$$

Where  $Q = q_1 + q_2$ , and  $p_w$  indicates the wholesale price paid, which in this case is also equal to the retailers' marginal cost. Also, for simplicity, the profit functions thus specified imply that one unit of the manufacturer's output translates into one unit of retail output without any costs associated with retailing activity.

The first order condition for each firm's profit maximisation leads the following reaction functions:

$$\begin{aligned}R(q_2) &= q_1 = \frac{a - p_w}{2 \cdot b} - \frac{q_2}{2} \\ R(q_1) &= q_2 = \frac{a - p_w}{2 \cdot b} - \frac{q_1}{2}\end{aligned}\tag{3}$$

By equating the reaction functions the symmetric equilibrium is found, where each firm has the following production and profit levels:

$$\begin{aligned}{}^c q^* &= \frac{a - p_w}{3 \cdot b} \\ {}^c \Pi^* &= \frac{1}{b} \cdot \left( \frac{a - p_w}{3} \right)^2\end{aligned}\tag{4}$$

And the equilibrium retail price for the good in market C is given as a function of  $p_w$  as:

$${}^c P_r^*(p_w) = \frac{a + 2 \cdot p_w}{3} \quad (5)$$

From (4) it is clear that the equilibrium level for both output and profits is decreasing in the wholesale price  $p_w$ .

#### **4.1.3. Retail Monopoly (Distribution market D and possibly C).**

Let's now look at a monopolist's maximising behaviour as a function of the wholesale price. For ease of comparison across the two markets it will be assumed that in the distribution market D market demand is exactly the same as in C, which is the linear schedule given in (1). In this way the following results will describe the market outcome when the distribution market (D and possibly C) is monopolised. The same cost structure will also be assumed.

Under these assumptions the profit function to maximise is:

$$\Pi(Q) = P_r(Q) \cdot Q - p_w \cdot Q \quad (6)$$

Which leads to the following equilibrium output, profit and retail price:

$$\begin{aligned} {}^D Q^*(p_w) &= \frac{a - p_w}{2 \cdot b} \\ {}^D \Pi^*(p_w) &= \frac{1}{b} \cdot \left( \frac{a - p_w}{2} \right)^2 \\ {}^D P_r^*(p_w) &= \frac{a + p_w}{2} \end{aligned} \quad (7)$$

As in the duopolistic case equilibrium profits are decreasing in  $p_w$ .

#### 4.1.4. The retailers' take-it-or-leave-it counter-offer.

In order to find what the counter offer would be under different market structures at the distribution level it is necessary to specify the manufacturer's profit function:

$${}^M\Pi = p_w \cdot Q - k \cdot Q \quad (8)$$

Where it is assumed that the manufacturer has constant marginal cost  $k$  of producing the good and that  $k < a$  so that a market for the good exists. As a consequence the manufacturer will always make positive profits so long as the wholesale price is greater than its marginal cost.

What this implies in terms of the manufacturer's decision in stage four of the game is that any wholesale price greater than  $k$  will be accepted. In order to find the retailers' optimal offer in stage three, recall that under both market structures profits are (strictly) decreasing in the wholesale price. This in turn implies that regardless of the specific market structure emerging in the final (retail competition) stage, the only offer a retailer would make in stage 3 of the game is, at the margin,  $p_w = k$ <sup>22</sup>.

#### 4.1.5. Stage 2: Accepting or rejecting the manufacturer's offer.

The monopolist in island D will reject any offer made by the manufacturer that stated a wholesale price higher than the manufacturer's marginal cost. This is due to the fact that a wholesale price equal to marginal cost can in any case be achieved by the monopolist retailer in the final stage.

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<sup>22</sup> More exactly:  $\forall \epsilon > 0$  the offer  $p_w = k + \epsilon$  is strictly accepted by the manufacturer. For simplicity, it is assumed that the limiting offer  $p_w = \lim_{\epsilon \rightarrow 0} k + \epsilon = k$  is also accepted by the manufacturer.

This is not the case for the two retailers in C. The 100% first-mover advantage gained by who accepts the manufacturer's offer over who refuses it implies that the two retailers, in stage 3 are playing the following simultaneous choice game:

		R2	
		A	R
R1	A	${}^c\Pi^*(\bar{p}_w) ; {}^c\Pi^*(\bar{p}_w)$	${}^D\Pi^*(\bar{p}_w) ; 0$
	R	$0 ; {}^D\Pi^*(\bar{p}_w)$	${}^c\Pi^*(k) ; {}^c\Pi^*(k)$

In which, for a given offer  $\bar{p}_w$  by the manufacturer, if both retailers reject then they will both offer  $k$  in the last stage and compete in a Cournot duopoly which leads to the profits in the bottom right corner. If one retailer accepts and the other rejects, the one that has accepted will have gained the crucial first mover advantage and will be a monopolist in the final stage. This time, though, the manufacturer will have chosen the wholesale price. On the other hand the one that has rejected will be out of the market and earn zero profits. Finally, if both players accept the offer they will compete in a Cournot duopoly in the final stage with the wholesale price determined by the manufacturer's offer.

By looking at the payoffs under the different strategies we can deduct a condition for the retailers to have an incentive to accept the manufacturer's offer in the second stage. In particular "Accept" is a strictly dominant strategy over "Reject" if the following conditions are satisfied:

$${}^D\Pi^*(\bar{p}_w) > {}^c\Pi^*(k) \tag{9}$$

and:

$${}^c\Pi^*(\bar{p}_w) > 0 \tag{10}$$

So if the manufacturer's offer satisfies these conditions the retailers will both accept it. From the equilibrium conditions given in (4) and in (7) it is possible to show that (9) and (10) imply respectively:

$$\bar{p}_w < \frac{1}{3}(a + 2 \cdot k) \tag{9b}$$

and:

$$\bar{p}_w < a \tag{10b}$$

Under the above assumptions, condition (10b) is redundant. So condition (9b) gives the highest possible wholesale price offered by the manufacturer that the retailers would accept.

#### ***4.1.6. Stage 1: The manufacturer's offer***

By backward induction the analysis of the choices in the various stages of the game has shown how the players would react to different offers by the manufacturer. In other words a derived demand for the good has been derived, which the manufacturer will consider in order to maximise his or her profits.

We know from (8) that the only case in which the manufacturer can make positive profits is by generating positive sales at a wholesale price greater than his marginal cost. But it has also been shown above that the monopolist in D will not buy at any such wholesale price. Finally I have derived a condition for retailers in C to accept a wholesale price higher than the marginal cost of production. What remains to be shown is whether any wholesale price in the (9b) range will generate positive sales and in particular which one

will the manufacturer offer. Total oligopolistic sales in market C as a function of the wholesale price are equal to twice the value of each firm's equilibrium output given in (4) above. They are, as a function of the manufacturer's offer in the first stage:

$${}^C Q^*(\bar{p}_w) = \frac{2}{3 \cdot b} \cdot (a - \bar{p}_w) \quad (11)$$

So this is the relevant derived demand for the manufacturer. Which means that he or she will maximise the following expression:

$${}^M \Pi(\bar{p}_w) = (\bar{p}_w - k) \cdot {}^C Q^*(\bar{p}_w) \quad (12)$$

The maximisation leads to the optimal offer:

$$\bar{p}_w^* = \frac{a + k}{2} \quad (13)$$

Which lies to the right of the range  $\left(k, \frac{1}{3} \cdot (a + 2 \cdot k)\right)$  and would not be accepted by the retailers. As the monopolist's profits are always increasing in the range, the optimal offer will therefore be the upper limit of the range.

#### **4.1.7. The Equilibrium**

In the game that has been described so far there is hence only one Nash Equilibrium that is characterised in the following way:

- (1) Producer offers  $\bar{p}_w^* = \frac{1}{3} \cdot (a + 2 \cdot k)$
- (2) Retailers in C accept the offer; the retailer in D rejects.

- (3) The retailer in D offers  $p_w = k$ .
- (4) The manufacturer accepts the offer made in (3).
- (5) Retail competition in the two distribution markets leads to the following results:

Equilibrium in distribution market: C (Duopoly)	Equilibrium in distribution market: D (Monopoly)
${}^c Q^* = \frac{4}{9} \cdot \frac{(a-k)}{b}$	${}^D Q^* = \frac{a-k}{2 \cdot b}$
${}^c P_r^* = \frac{1}{9} \cdot (5 \cdot a + 4 \cdot k)$	${}^D P^* = \frac{a+k}{2}$
${}^c \Pi^* = \frac{2}{b} \cdot \left[ \frac{2 \cdot (a-k)}{9} \right]^2$	${}^D \Pi^* = \frac{1}{b} \cdot \left( \frac{a-k}{2} \right)^2$

In this model retailers that have the same technology pay different wholesale prices only because of the different intensity of competition at the distribution level. In particular the duopolistic retailers in market C pay a wholesale price of  $\bar{p}_w^* = \frac{1}{3} \cdot (a + 2 \cdot k)$  that is higher than the one paid by the monopolistic retailer in D, which is equal to the producer's marginal cost of  $k$ . The key issue is that the wholesale price paid by the retailers in C does not in any way depend on the parameter  $b$  of the demand function, that is it does not depend on the size of the market in which the two retailers operate. In other words, and more to the points discussed below, the retailers bargaining power is not related to their procurement volume. The only thing that matters is the degree of downstream competition.

It is also worth noting at this point that final prices are higher, and total sales are lower in the duopolistic distribution market than in the monopolistic one. This is in contrast with the results on countervailing power of von Ungern-Sternberg (1996). There it is shown

that if retailers compete à la Cournot in their distribution markets, an increase in concentration will involve higher final prices. This difference of results is due to the fact that while in von Ungern-Sternberg the outcome of negotiations is represented by a Nash bargaining solution, in this model the bargaining process is not efficient. This means that in the relationship between the manufacturer and the duopolistic retailers in C there is an element of double marginalisation, which is not present with the monopolist retailer in D because he or she has full monopsony power.

## 5. Results and implications for competition policy

To analyse the implications of this model for market definition, consider the following numerical example. Suppose the two distribution markets have different sizes. Using the linear demand specification employed above, this translates into assuming different values for the parameter  $b$  for each of the two distribution markets. So, given a demand of  $P_i(Q) = a - b_i \cdot Q$ , where  $i = c, d$  indicates the distribution market, the smaller is  $b$  the higher the size of the market. The equilibrium total sales volume of the manufacturer can be derived from the box above, and is given, under the generalised demand, by:

$$Q^* = {}^c Q^* + {}^d Q^* = \frac{4}{9} \cdot \frac{(a - k)}{b_c} + \frac{(a - k)}{2 \cdot b_d}$$

From these formulas it is possible to calculate each retailer's buyer share relative to the manufacturer's total output as a function of the size of the distribution market. Let's now proceed in a way that mimics the Commission's practice and assume that the definition of the intermediate market isolates the monopolist producer on the supply side, and that on the demand side the retailers from both markets are taken to constitute the same set of relevant buyers<sup>23</sup>. The Commission states that 22% is a meaningful threshold for

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<sup>23</sup> To fix ideas think of the two distribution markets as sub-national areas in which three national retail chains operate with a different intensity of competition; and think of an intermediate market definition that lumps together all the retailers into the same set of buyers.

procurement volume to indicate significant market power<sup>24</sup>. That is, a retailer whose procurement volume is above 22% as a percentage of the supplier's total output has significant buyer power.

To be able to refer to this threshold let's assume, in particular, that market C is five times as big as market D, that is that  $b_d = 5 \cdot b_c$ , and for simplicity that  $b_c = 1$ . Total supplier output simplifies to:

$$Q^* = {}^C q_1^* + {}^C q_2^* + {}^D Q^* = \left[ \frac{2}{9} + \frac{2}{9} + \frac{1}{10} \right] \cdot (a - k)$$

In terms of buyer shares this means that each retailer in market C accounts for more than 40% of the total manufacturing output while the retailer in D has a buyer share of around 18% (below the 22% threshold). A simple market share analysis would therefore conclude that retailers in C do hold significant buyer power while the retailer in D does not. A conclusion that contrasts dramatically with the results of the model in part four, where retailers in C pay a higher wholesale price than the retailer in D who has total monopsony power with respect to the manufacturer.

This example shows the type of distortion that can arise by not taking into account the role that downstream competition plays in determining relative bargaining strength, when areas of different competitive intensity can be identified at the distribution level. If market definition at the intermediate level is too broad, the risk is to underestimate the buyer power enjoyed by small local monopolies and to overestimate the one of big retail chains whose outlets face intense competition.

These observations, though, do not always apply; and specifically not when the manufacturing industry is perfectly competitive. This is because in this case the type of analysis conducted in part four cannot be carried on. There cannot be two different prices paid by differently powerful sets of buyers to the same competitive industry. The

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<sup>24</sup> *Rewe/Meinl* Decision par. (101).

wholesale price would be determined by more or less influential buyers, given the same manufacturing industry supply curve.

In fact, with a competitive manufacturing industry, the conclusions of the numerical example above, are somehow reversed and a broad intermediate market definition is what is required. Indeed, if retailers from the two distribution markets were separated in two different relevant markets, the resulting market shares would overestimate the buyer power enjoyed by the monopolist in D.

To sum up, the general lesson arising from the discussion in part three and the model in part four, is that if retailers' buyer power is determined by their seller power in their local distribution markets, then the market definition exercise should be conducted at the two levels of the supply chain in a consistent way. This means that if it is possible to identify at the distribution level sub-national areas where different players face different degrees of competition, then this should be taken into account to the extent of defining narrow and local distribution markets in which to assess a retail merger's direct effects.

Furthermore, at the intermediate level, different approaches are required depending on the competitive conditions on the supply side. If the manufacturing industry is competitive, then market shares can indicate buyer power if market definition is broad enough to encompass retailers from all distribution markets served by the manufacturing industry. If, on the other hand, substantial market power is held by the manufacturing industry then the authorities should focus the attention on the sources of relative bargaining strength, that is on the competitive conditions in the local distribution markets. In this case buyer shares, if they are to be used at all, could give an indication of buyer power only if they are calculated with respect to the manufacturing industry's sales in each local market.

The immediate corollary to these conclusions relates to the identification, at the intermediate level, of "homogeneous" sets of suppliers against whom to measure retailers' buyer power. Given the importance that competitive conditions on the supply

side have for a correct measurement of buyer power, this is also a step that should be taken with care. The Commission has chosen, in the Rewe/Meinl case, several product categories that seem to have been identified as homogeneous with respect to production techniques rather than product substitutability<sup>25</sup>. It seems important, in the light of the above discussion, to put more weight on the latter parameter in order to be able to refer to manufacturing industries with recognisable competitive conditions.

## **References**

- Bowley**, A.L., 1928. “Bilateral Monopoly”, *Economic Journal* 38, pp.651-659.
- Corstjens**, J. and **Corstjens**, M., 1995. *Store Wars: The Battle for Mindspace and Shelfspace*, Chichester: John Wiley & Sons.
- Dobson Consulting**, 1999. *Buyer Power and its impact on competition in the Food Retail Sector of the European Union*, Report prepared for the European Commission – DGIV. Study Contract No. IV/98/ETD/078.
- Dobson**, P.W. and **Waterson**, M., 1997. “Countervailing power and consumer prices”, *Economic Journal* 107, pp.418-430.
- Dobson**, P.W., **Waterson**, M. and **Chu** A., 1998. “The Welfare Consequences of the Exercise of Buyer Power”, OFT Research Paper No. 16.
- FTC**, 2000. “Slotting Allowances and other grocery marketing practices”. FTC Public Workshop. <http://www.ftc.gov/bc/slotting/index.htm>.
- Galbraith**, J.K., 1952. *American Capitalism: The concept of countervailing power*, Boston, MA: Houghton Mifflin.
- Green**, E. and **Porter**, R., 1984. “Non-cooperative collusion under imperfect price information”, *Econometrica* 52, pp. 87-100.
- Hewitt**, G., 2000. “Background Note” in: “Buying Power of Multiproduct Retailers”, *OECD Journal of Competition Law and Policy* 2, pp.93-166.
- Kreps**, D. and **Scheinkman**, J., 1983. “Quantity precommitment and Bertrand competition yield Cournot outcomes”, *Bell Journal of Economics* 14, pp. 326-337.
- London Economics**, 1997. “Competition in Retailing”, OFT Research paper No. 13.

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<sup>25</sup> *Rewe/Meinl* Decision par. (77).

**Mathewson, G. F. and Winter, R. A.**, 1997. “Buyer Groups”, *International Journal of Industrial Organization*, 15, pp. 137-164.

**NERA**, 1992. “Market definition in UK competition policy”, OFT Research Paper No. 16.

**OECD**, 1999. “Buying Power of Multiproduct Retailers”, Competition policy roundtable n.23. <http://www.oecd.org/daf/clp/Roundtables/buying00.htm>.

**Scherer, F.M. and Ross, D.**, 1990. *Industrial market structure and economic performance*, Boston, Ma: Houghton Mifflin.

**Shaffer, G.**, 1991. “Slotting allowances and resale price maintenance: a comparison of facilitating practices”, *RAND Journal of Economics*, 22, pp. 120-135.

**Sullivan, M.W.**, 1997. “Slotting Allowances and the market for new products”, *Journal of Law and Economics*, 40, pp. 461-493.

**Von Ungern-Sternberg, T.**, 1996. “Countervailing power revisited”, *International Journal of Industrial Organization* 14, pp. 507-520.

**Walton, S.**, 1992. *Sam Walton Made in America: My Story*, New York, NY: Doubleday.